INTERNATIONAL
MEDICAL MAGAZINE.

Vol. V.] JULY, 1896. [No. 6.

ORIGINAL COMMUNICATIONS.

A CASE OF LEPROSY OF THE MIXED TYPE.[1]

BY C. F. HERSMAN, M.D., AND H. N. LYON, M.D.

A SHORT time since there came to Dr. W. A. Hardaway's clinic, at the Missouri Medical College, a case of the mixed form of leprosy, which is of considerable interest. It is by permission of Dr. Hardaway that the following notes of this case are published:

John M., aged ten, is of French extraction, a native of this country, and has always had excellent health except for an eruption of "large blisters," which appeared for a short time upon his body when he was

[1] Dr. Charles Finley Hersman, one of the authors of the excellently reported case of leprosy that appears in this issue of the INTERNATIONAL MEDICAL MAGAZINE, died on October 11, 1895, at the early age of thirty-one years. He was born in Fulton, Mo., and was educated at Westminster College. After a short period of post-graduation study with a view to the ministry, he relinquished the idea and took up the study of medicine. In due season he graduated with the highest honors from the Missouri Medical College in St. Louis, and for several years subsequently devoted himself assiduously to hospital service and laboratory work. At the time of his death, when he had just assumed the responsibilities of private practice, there was no man of his age with better qualifications for the calling of a physician, uniting, as he did, scientific and practical ability, a charming personality, and a high sense of honor. Among his few contributions to medical literature, aside from certain articles in the medical press, may be mentioned the essay on "Lymphangioma" in Morrow's "System of Dermatology," and the joint authorship of the "Abstract on Dermatology and Syphilis" in Gould's "Year-Book of Medicine and Surgery." For some time also he made the reports on the "Progress of Skin-Diseases" in this magazine, besides making similar reports on "General Medicine" for a local journal. Some few weeks before his untimely death Dr. Hersman had been appointed professor of clinical medicine in his Alma Mater.

W. A. HARDAWAY, M.D.

five years old. The parents of the boy were healthy people, except that the father was an alcoholic. He has several brothers and sisters now living who are in good health and free from any form of skin-disease.

The boy has lived in various parts of Southern Texas, mostly at Galveston. About one year ago he came to live in St. Louis.

The child has always been regarded as a robust person, and even now he seems well nourished and the functions of the body, except as mentioned, are carried on in a perfectly normal way. His mind is mature beyond his years and is keen and active. His mental state is peculiar. He is easily made to cry, as by a reference to his illness, but the next instant is laughing at some childish jest.

In January of this year he frequently complained of pains in the feet and toes which were regarded by his relatives as "growing pains." During the same month he was ill from a "severe cold." While a convalescent his sister noticed a number of small "red pimples" over the small of the back. These disappeared in a short time, to be replaced by the "blotches" which now exist there. About the same time it was observed that he could not use the fingers of his right hand well, finding it difficult to hold a pen in writing. He never complained of any febrile symptoms.

When first examined, August 8, 1895, the following condition was noted: On the forehead and extending on to the nose is a discolored area, of a violascent hue, an inch wide at its greatest diameter. The patch is slightly elevated, and on picking up the skin it is found to be thickened. Sensation in this area is only slightly affected, the points of the æsthesiometer being felt as one at two centimetres. Over the left eye and extending into the eyebrow is a similar area, about the size of a silver quarter, in which sensation is slightly diminished. On the left half of the upper lip is a spot which encroaches on the vermilion border and presents the same peculiarities as those just described. Continuing the inspection one finds an irregularly oval patch, two inches by three inches, just beneath and somewhat to the right of the umbilicus. This area is of a brownish or mahogany color, its borders slightly elevated, while the centre is depressed; it is lighter in color and appears atrophic. A small amount of infiltration can be appreciated at the border and there is slight scaling. The boy calls one point over this patch when the limbs of the æsthesiometer are separated three centimetres. The pain and temperature sensations are but little if any affected here. Beneath this patch, in the left pubic region, is an exactly similar area shaped like the figure 8, three inches long and one inch wide. On the dorsal surface of the penis, near the root, is a sinuous brownish ridge a quarter of an inch wide and slightly elevated. On the right side of the scrotum is an infiltrated patch of skin as large as a silver quarter, and of a pale fawn color. This area is elevated fully one-eighth of an inch, and the skin has lost its normal markings on account of the infiltration. Pain and tactile sense are diminished in this tubercle. The left epididymis is thicker than the right, but is not tender on pressure.

The anterior surfaces of both thighs present a mottled discoloration limited above by the inguinal fold and below by the knee. This whole area is mapped out by a brown elevated border from a quarter of an inch to an inch in width, which passes above across the buttocks and below to the back of the knee, so that viewed from the rear the area has somewhat the shape of a pair of bathing trunks. The mottled areas thus enclosed are evidently due to the coalescence of isolated patches and the extension of their borders. At the middle part of the outer aspect of the left thigh is an islet of normal skin, near the centre of which are three semilunar infiltrations exactly resembling the borders of the large areas. Sensation on the anterior surfaces of the thighs is profoundly affected. The æsthesiometer is perceived as one point at eight centimetres. Analgesia is so marked that a pin can be thrust through a fold of skin without causing pain. There is a perversion of the temperature sense, heat being considered as cold, and cold objects being called hot. Sometimes the boy regarded a test-tube containing hot water as the prick of a pin.

Over the left scapula (Fig. 1) are two brown areas, the upper the size of a dollar and the lower twice as large. The two patches are beginning to coalesce at one point. In the lower area the centre has already become much lighter than the border. The back, from the waist-line to the knees, presents lesions varying in size from an inch up to several inches in diameter. The smaller patches show a uniform brown infiltration, but in all the large lesions the centres are atrophic. In some of the patches it could be clearly shown that while sensation was diminished at the centre, at the border hyperæsthesia existed. At some places the borders of the older lesions presented points of dense infiltration which could be properly termed tubercles.

The right forearm (Fig. 2) is involved by a white, somewhat atrophic area surrounded by a brown sinuous elevated border, such as has been described, though it is fainter than in the lesions upon the trunk. The right hand is in the position which has been styled "the leper claw," the fingers being flexed at the first phalanges and bent backward at the metacarpophalangeal joints. The thenar and hypothenar eminences are atrophied as well as the dorsal interossei. The strength of this hand is much less than that of the left. The outer side of the left forearm presents skin lesions similar to those described as affecting the right. At the bend of the elbow two diamond-shaped patches are to be seen. At the insertion of the left deltoid is a round brown infiltration. This looks exactly like a vaccine scar which had become the seat of the leprous infiltration, but the patient states that he has not been vaccinated. The muscles of the palmar surface of the left hand are slightly atrophied.

The right ulnar nerve is as large as an ordinary lead-pencil, and feels like a wire under the skin. Passing the finger up and down along the course of the nerve an indistinct sensation of nodules is experienced. The thickened nerve can be traced up into the axilla and downward to the ulnar

groove behind the elbow. The nerve does not seem tender to pressure, but at times, when forcible compression by rolling the nerve under the finger is made, a tingling is felt in the little finger. Sensation is markedly diminished in both sides of the little finger, in the ulnar side of the ring-finger, and to a less extent on the radial side of the ring-finger.

The left ulnar nerve is appreciably enlarged, but not so much as the right. About one and a half inches above the internal condyle a nodule can be felt which seems to be an enlarged lymphatic. It lies in the course of the nerve. If there is any alteration in sensation in the left hand in the distribution of the ulnar nerve, it is so slight that we could not be certain of it. The reflexes are normal, and sensation in the uvula, tonsils, and pharynx is not affected.

Upon the inner aspect of the right heel is a reddish, scaling area the size of a quarter, where the patient states that a blister arose without provocation about five weeks ago. Over the knuckles of the index, middle, and third fingers similar traces of blisters are to be seen. Both peroneal nerves seem somewhat thicker than normal. Upon the ball of the right foot is a fissure extending through to the true skin, which is very slow about healing. Patient does not know how he hurt himself to cause this. On several occasions he has run nails and pins into his feet without being aware of it.

Although febrile symptoms, according to the statement of the patient and his friends, have formed no part of his complaint, he has had a certain degree of fever on each occasion when we have taken his temperature, 100° F. being the highest. His pulse is in the afternoon about 100.

Though the most marked alterations of sensation were found on the anterior aspects of the thighs, yet in all the lesions they were more or less present. In some of the very small patches, where as yet there was no atrophic change, there was a slight hyperæsthesia, but in all the areas where atrophy had commenced touch, pain, and temperature sensation were all decreased.

We did not detect any special areas of anæsthesia or analgesia on the feet, but it was evident that the boy did not feel pain there in a normal way, since he admitted that he often wounded his feet without knowing it.

We made no accurate tests to determine the amount of perspiration from the affected areas, but owing to the dry and scaly look of the skin we believe that cutaneous transpiration was decreased.

PATHOLOGICAL ANATOMY.

A piece of skin was cut from the border of one of the older lesions. Sections cut from this show that the greatest changes have occurred in the corium. These changes consist of isolated accumulations of granulation tissue, of small exudation cells, collected for the most part about the blood-vessels, glands, and follicles. The corium is not thickly beset with these islands of granulation tissue, but everywhere normal tissue intervenes.

The stratum corneum is somewhat thickened. The rete seemed well-nigh obliterated. Here and there down growths from the epidermis into the corium could be seen.

The sebaceous glands were thickly hemmed in by exudation cells, and the epithelium of the acini was enlarged, in some places almost obliterating the lumen. The external and middle coats of the blood-vessels were infiltrated with masses of exudation cells, so that here and there a bulging of the walls and a partial obliteration of the lumen occurred.

In a few sections, a very few large multinuclear cells (resembling giant-cells) were met with, while none of the large mononuclear cells spoken of as "lepra cells" were found.

The sweat-glands could not be found in any of the sections examined.

It would seem from these findings that the essential factor of the process is an infiltration of granulation tissue, less vascular than syphilitic tissue and not showing such a tendency to the formation of nests as is seen in lupus. The changes probably commenced in the deeper layers of the corium, as here the most marked alterations are to be seen. These changes are specially to be noted about the blood-vessels, glands, and follicles.

Sections were also stained to show the lepra bacilli. Carbol-fuchsin solution was used. The sections were warmed in this solution for five minutes and then decolorized with twenty-per-cent. nitric acid. The most perfect results were obtained after a very long decolorization. The authors think that this fact cannot be too much insisted upon in examining for lepra bacilli. Several times we have failed to be able to demonstrate the bacilli because the granulation tissue in which they lie has not been sufficiently bleached, and so the outlines of the bacilli could not be made out. In this case the best slides were obtained after forty-eight hours' decolorization. The bacilli were found, for the most part, in the deepest part of the corium, lying in the characteristic heaps. None were discovered in cells, but they seemed to lie in the spaces between the connective-tissue bundles. In several places bacilli were discovered in the granulation masses about the hair-follicles. It seems to us that this case to a certain extent bears out Petrini's opinion[1] that the anomalies of sensation found in the lesions of the skin in anæsthetic leprosy are not due alone to the presence of the bacilli in the nerves, but to their localization in the skin. The skin lesion from which the piece of skin was cut for examination was such a one as is generally described as constituting a part of anæsthetic leprosy, and here our careful examination detected the bacilli typically located in the skin.

REMARKS.

In the title of this article we have referred to our case as one of leprosy of the mixed type. Nearly all the skin lesions are those which would fall under the description of anæsthetic leprosy except the well-defined nodule

[1] Annales de Derm. et de Syph., December, 1894.

on the scrotum and perhaps also one or two points in the borders where, as mentioned, there were nodules.

It is always important in a leper to obtain a history of exposure to infection. Though in the case here reported we have made every effort to obtain information which would throw light on this point, we have been unsuccessful. However, when one remembers that Galveston, where the boy has long resided, is one of the southern ports having direct communication with certain leprous districts, such as Central America and Louisiana, it may be readily conceived that numerous unrecognized opportunities for infection have occurred.

Interest also attaches to the length of time during which the patient has been suffering from his malady. The closest questioning for some time failed to get any history dating further back than seven months, and yet, considering the ravages which the disease has made, this time seemed very short. Finally, the sister of the boy recalled that five years ago he suffered from a pemphigoid eruption. It is possible that this was really a leprous pemphigus.

The bullous lesion is the one which commonly first ushers in anæsthetic leprosy. If this be true it is odd that in the interval before the present attack there were no nervous symptoms. This may perhaps be accounted for by the age of the patient, which might not only render him oblivious to certain mild nervous disturbances, but might prevent his giving expression to what he felt.

It is unusual to see leprosy developing in this country in one so young. The disease is most often acquired by those who have resided in foreign countries, and such persons are usually adults.

In addition to those nervous disturbances which have been noted, in several patches there was demonstrated a retardation of nervous conduction such as may frequently be seen in locomotor ataxia.

It has often been stated by authors that it is probable that the pemphigoid lesions so frequently seen in lepers are the results of unconscious burns. A phenomenon was witnessed in our case which seems to show that there is a tendency on the part of the skin to respond to slight injuries of all sorts by the formation of blebs. Upon the first examination a pin was thrust into the skin at the centre of an atrophic lesion. On the next day a large bulla fully an inch in diameter was noticed in this place. The pin had not been thrust straight in, but had been passed horizontally into a fold of skin. The bleb was oval, with its axis along the track of the pin-wound. On another occasion the lad knelt for some time upon the rough edge of a chair. A few hours after he presented on each knee a small denuded area around the edges of which epithelial shreds like the tops of blebs could be seen.

It has frequently been noted that leprosy developing before the age of puberty interferes with sexual development. We thought in this case we could discover a leprous nodule in the epididymis. The disastrous effects

of leprosy upon the sexual functions may perhaps be due to lesions of the several organs as well as to lesions of the nervous system.

From a humanitarian point of view this case presents something of interest to which it may not be out of place to call attention. It is certain that lepers should not be permitted to mingle with their fellows, as there can be no doubt that the disease is capable of communication. Leprosy now plays an insignificant part among the infectious maladies of this country, and this fact affords the best argument for an efficient quarantine. If the disease should ever become as prevalent as tuberculosis is, it would be rather too late for quarantine to be effective. It needlessly complicates expenses for each State to sustain its own leper colony. And, besides, one should not forget that the unfortunate leper is still a human being with all the social tastes of our race. To segregate such persons where there are only a few or even only one leper is to inflict a needless hardship. The boy who forms the subject of these notes is a child with an unusually bright and active mind, with perhaps many years to live, and it is not a pleasant thought that he must be placed in complete isolation without mental or physical occupation. The government should maintain a leper colony where the interests of the community shall be fully protected while the unfortunate lepers are allowed as many means of happiness as their state admits.

THE TREATMENT OF CARCINOMA OF THE UTERUS, CERTAIN FORMS OF OVARIAN DISEASE, AND FIBROIDS OF THE UTERUS, BY MEANS OF THYROID, PAROTID, AND MAMMARY GLAND THERAPEUTICS.[1]

BY ROBERT BELL, M.D., F.F.P.S.G.,
Senior Physician to the Glasgow Hospital for Diseases Peculiar to Women.

From the fact that disease is incompatible with health, it naturally follows that where disease has taken possession of a structure, there must have previously existed an enfeebled condition of the parts affected, or possibly a weakness or faulty action of a distant organ upon which that immediately affected is dependent for its healthy activity, either due to some reflex or other action which is not quite understood. If a person is in possession of perfect health, and all his functions are acting in accordance with this condition, then the resisting power of that individual against disease is at its acme; but if some depressing influence is brought to bear upon him as a whole, or upon a particular organ or organs in particular,

[1] Read before the British Gynæcological Society, May 14, 1896.

these, as a natural consequence, are rendered liable to become a prey to disease. For example, a person may one day be in the possession of the most robust health, and on the following—by exposure to the depressing effects resulting from prolonged exposure to cold—be completely placed *hors de combat*. This exposure doubtless depresses the vitality of the heretofore robust and healthy individual, when he is rendered liable to become the subject of disease, varying in type. Then, again, the health may be depressed by a continuous inhalation of poisonous gases, which produces a similar effect. Hence, on the one hand, the system may become prone to pneumonia, bronchitis, or various other inflammatory conditions; while, on the other, we find the body is converted into a nidus for the development of the virus of zymotic disease. Now, it cannot possibly be averred that the presence of the germs did not exist in the economy prior to the vitality having been reduced by the influences mentioned, and the only conclusion we can come to in the circumstances is that the inherent vigor of the healthy man was sufficient to withstand the onslaught of these germs whilst his health remained intact; whereas, in the other case, when this had been reduced by the one cause or the other, the vitality of the germs having attained a potency—the more powerful of the two—were thereby enabled to effect a successful invasion. From what we know of the history of these disease-producing entities, we are forced to the conclusion that they are ever present both without and within our bodies, and are only waiting their opportunity to enable them to assert their power for evil, and take action when the occasion arrives.

It is not, however, my intention to go into the pathogeny of specific disease, but to confine myself to the relationship of certain organs which exert a potent and incomprehensible influence upon distant structures. It is quite evident that when local disease commences in an individual, the organ which it takes possession of must have departed from the healthy standard prior to this. Moreover, it is not unreasonable to infer that the weakened condition of the organ affected may have been influenced by a morbid or functionally altered state of an organ in close physiological relationship. That is to say, the functions of the one part of the body are so dependent for their healthy condition upon the influence exerted on them by other organs that when the latter cease to exert their normal activity, the evil consequences upon the constitution at large are not always apparent in the structures themselves, but are manifested in a pathological condition of other parts. For example, we have learned from recent experience that the healthy condition of the skin, mucous membrane, and connective tissue subjacent to these is dependent to a very considerable extent upon a peculiar action of the thyroid gland. Hence, we have myxœdema occurring where this gland is incapacitated from performing its normal functions. Now, basing my reasoning on this and other similar coincidences, for a considerable time I have been devoting my attention to certain diseases of the female pelvis, and judging from the beneficial effects which thyroid extract exerts upon

the epithelium of the skin when psoriasis—even of an aggravated type—is present, I was led to infer that it might possibly be due to the absence of some obscure catalytic influence of this gland that epithelioma was enabled to take possession of the mucous membrane of the cervix uteri, seeing that the disease invariably commences in the epithelial layer of the mucous membrane. From this fact, and inferring that the thyroid gland would seem to exert a special influence upon the healthy functional activity of the epithelium, both of the skin and mucous membrane, I was naturally led to conclude that, as it acted so beneficially in psoriasis, it might be equally useful in the treatment of an unhealthy condition of mucous surfaces. While basing my argument on these lines, it must be conceded that an unhealthy condition of the thyroid does not necessarily or invariably give rise to epithelioma; yet in my experience it is frequently, nay, almost invariably, accompanied by an excessive metrorrhagia, showing that the function of this gland exerts some potent influence upon the lining membrane of the uterine canal as well as that of the cervix. Now, it is not at all a common occurrence for epithelioma to attack the cervix uteri if this portion of the organ has been immediately prior to the invasion, and is otherwise, in a normal condition. If, on the other hand, it is suffering from the effects of any lesion, such as laceration or hypertrophy due to long-continued endometritis, then it would seem that this unhealthy state of the part acts as a strong predisposing cause, not only to epithelioma, but to affections of a less virulent type. It seems also conclusive, from the experiments which I have made, that an exciting cause exists in an abnormal condition of the thyroid. Our duty, therefore, in every case where the uterus shows evidence of disease, however benign this may appear to be, is to endeavor to restore it to its normal condition, and thus remove what may be justly considered the predisposing cause to malignancy.

The notes of cases which I subjoin will go a long way to prove the correctness of this theory.

Then it would appear that the parotid gland exerts a most powerful influence upon the ovaries. Whether disease of the ovaries is superinduced by any lack of influence of the parotid, I am not in a position to judge, but this I can vouch for, that when disease does exist in the ovaries, this can be brought under subjection by the administration of parotid glands of healthy young sheep, calves, and pigs.

Then, again, it is also beyond dispute that fibroids of the uterus, as well as hyperplasia and flaccidity of the organ, can be most beneficially affected and brought under subjection by the employment of mammary glands of healthy animals. I have also ascertained that disease of the ovaries is beneficially influenced by the administration of mammary gland.

There seems, therefore, to be a considerable field for observation in the treatment of these diseases by means of glands which bear a physiological relationship to those which are diseased, and I now proceed to give a record of cases which I have treated by these therapeutic agents.

Besides the following cases of carcinoma of the cervix uteri which I have treated by means of thyroid elixir and palatinoids, a number which I have attended at the out-door department of the hospital have passed from under my observation, as they failed to report themselves when their symptoms were alleviated. I am, therefore, unable to give a complete report of these, and will confine myself to those private cases which I have kept under constant observation.

The first patient that I gave thyroid elixir to was Mrs. M., aged forty-eight, who came to me in the summer of 1895 complaining of constantly recurring floodings, alternating with a copious purulent and offensive discharge. On making a vaginal examination a cauliflower excrescence was brought into view. This I removed by curetting, and applied fuming nitric acid to the raw surface. She began by taking a teaspoonful of a carefully prepared thyroid elixir three times a day, and this she continued for three months. By this time all discharge had ceased, and her general health was much improved. I saw her on February 18 of this year, when, with the exception of a small slough that had come away, accompanied by the discharge of a little blood, she told me that she had had no evidence of disease. As the uterus was somewhat enlarged, and the stomach was evidently being upset by the long-continued use of the thyroid elixir, I put her upon the elixir of mammary gland, which she continued with the same frequency and dosage for some time. I saw her again on April 21, when she informed me that a considerable slough had come away, but this was unaccompanied by any discharge whatever; and although she was complaining considerably of weakness, she had no symptoms of local disease, and her intention was to go to the country for change of air.

Mrs. G., aged sixty-five, was sent to me by Dr. Donald, of Paisley, on December 10, 1895. She was suffering at the time from a copious discharge of fetid pus, but she had been seriously exhausted by repeated attacks of severe hemorrhage, and was quite cachectic. Epithelioma had made considerable inroad upon the cervical tissue and extended considerably beyond the cervix. As much of the diseased tissue as could be safely acted upon by the curette was removed, and a stick of chloride of zinc inserted within the canal. She was ordered to take a teaspoonful of thyroid elixir three times a day, and was sent home at the end of a week. Within a few days of her return she was seized by a severe flooding, which Dr. Donald had considerable difficulty in checking. Since then, however, she has had no more return of discharge of any kind, and at the present time there is no trace of disease remaining.

The following notes have been sent me within the last few days by Dr. Donald:

"Mrs. G., aged sixty-five, enjoyed remarkably good health all her days; in fact, until the recent illness had never been a single day in bed, except during confinements. She first menstruated when she was fifteen

years of age, and was always regular. She was married at the age of twenty-five, and has had ten natural confinements, all her children being alive. Her last child was born when she was forty-nine years of age, when she made an excellent recovery. This labor was as natural as any. The patient never again menstruated. The first evidence of her recent illness beginning was four and a half years ago, when she complained of a hot, burning feeling in her external genitals and vagina, and great pain on micturition. These symptoms gradually got worse, but became greatly aggravated by severe backache, so much so that she could only walk with difficulty. About eighteen months ago the slight discharge which she had with the foregoing symptoms became increased, more purulent in character, and at times bloody. I saw Mrs. G. early this year, and since that time had frequent opportunities to observe her various symptoms. The discharge being very free, she had lost considerably in weight and strength. Since she was under treatment by Dr. Bell the discharge has entirely ceased; she is free from all pain and discomfort; has gained in weight, and consequently strength. In fact, she says she feels now perfectly well.

(Signed) "ARCH. DONALD."

Mrs. M., aged thirty-one, suffering from carcinoma of the cervix, has been taking thyroid elixir for over two months, and had ichthyol tampons applied twice a week during the whole of this period. All symptoms of malignancy have now disappeared, and the health of the patient is better than it has been for years. She is still taking the thyroid elixir, and continuing the use of the tampons.

Dr. MacGregor reports on this case on April 17 and states: "The cervix appears healthy with the exception that there is a very slight trace of erosion on the under lip, also a little mucous discharge, but very small in quantity."

Miss D., aged forty-eight, from Darlington, called upon me on November 28, 1895. She was suffering from a large fibroid of the uterus, and her object in coming to me was to have this removed. As I was interesting myself in the gland-treatment of the uterus and ovaries, I prevailed upon her to remain under my observation for two months, and to take elixir of mammary gland in teaspoonful doses three times a day, instead of submitting to operative treatment. This she consented to do. She called on me on February 4, when the tumor, which before had been quite globular in shape, and would compare to a pregnancy of about seven months, was very much reduced in size, and had become quite irregular in outline. I again saw her on February 18, when she expressed herself as feeling still much better, and there was further evidence of reduction in the size of the tumor. She had now no inconvenience from its presence, and returned home. In the latter end of March I had a letter from her from Stockton, stating that she is still improving. On April 21 she came to report herself, when I found the tumor was not more than one-fourth of its original size, and it

had ceased to give any trouble; in fact, she stated that she was not aware of its presence. She is to continue the mammary palatinoids twice a day.

Mrs. L., aged thirty-three, has a small fibroid on the anterior wall. (These notes are dated January 21, 1895.) She was ordered to take mammary palatinoids, each containing five grains, three times a day. I saw her on April 2 and found the tumor had diminished considerably in size, and the hemorrhage had ceased. Her anæmic condition had also disappeared, and her general health was restored. On May 5 she called to report herself after her menstruation, and stated that although it was still in excess of what it was wont to be before she took ill, yet it had not given her any concern.

Mrs. McC., from Perth, consulted me on March 18, 1896. She was the subject of menorrhagia, dysmenorrhœa, and a highly sensitive condition of the uterus. I made an application of iodized phenol to the uterine canal, and ordered her to take three palatinoids of mammary gland *per diem*. On April 3 she returned and stated that all her pain had disappeared, and that the general health was very much improved. She called again after her next menstruation, and stated that the discharge was considerably less in quantity, and had not been accompanied by pain.

Mrs. T., aged thirty-four, from Grahamston, married eleven years, two children, the last four years old, consulted me on March 6. She was suffering from menorrhagia and enlargement of the uterus. Since then she has come into Glasgow once a week, and I have applied iodized phenol to the uterine canal and introduced an ichthyol tampon. At the same time she has been taking three mammary palatinoids *per diem*. She menstruated during the last week of March, when the quantity of discharge was considerably reduced. On April 7 her general health was very much improved, and the condition of the uterus was highly satisfactory. When I saw her, on May 5, she stated that her painful symptoms had entirely disappeared, and expressed herself as feeling perfectly well.

Mrs. O., aged thirty, no family, consulted me on January 28, complaining of a hard lump in the right pelvis which caused her considerable pain, and she was anxious for me to remove it. This I diagnosed to be an enlarged ovary, probably fibroid in its nature. I agreed to the operation on condition that her husband and other friends gave their consent. On her husband coming to see me, he begged that I in the first place would consent to give a fair trial to medicinal measures before resorting to operation. This I readily agreed to, as I was most anxious to try the effects of parotid gland in such a case. I therefore prescribed three five-grain parotid palatinoids *per diem*, and she has called upon me once a week, so that I could watch the case carefully, when I took the opportunity of introducing an ichthyol tampon. On February 21 her health was much improved, while the tumor was more movable, not so painful to touch, and decidedly smaller in size. She then commenced to take four palatinoids in the twenty-four hours. I again saw her on March 10, when she had just menstruated and

had suffered no pain. The ovary did not seem to be further reduced, but was evidently less sensitive to touch. She is still under treatment, and her condition continues to improve.

Mrs. H., aged fifty, consulted me in December, 1895, suffering from an enlarged left ovary, which had attained the size of a mandarin orange. There was also a suspicious condition of the cervix. I applied an ichthyol tampon, and prescribed parotid palatinoids, to be taken four times a day. On March 10 all suffering had disappeared, and the ovary had returned to almost its normal condition. She has been continuing the palatinoids since, and on May 5, when I saw her last, there was no sign of disease whatever.

Mrs. M., aged thirty-five, from Greenock, consulted me on February 25. She was then suffering from enlarged right ovary, and had metrorrhagia, which continued for about three weeks. She was also very dyspeptic, for which I prescribed, and also advised her to take parotid palatinoids four times a day. These she has continued with the most satisfactory results, the right ovary having attained its normal condition, and the menorrhagia has ceased.

Mrs. M., aged thirty-six, first consulted me in May, 1888, when the uterus was large, flabby, and patulous. This was curetted on two different occasions. The right ovary and tube were also enlarged and excessively painful. During the past two years she has had ichthyol tampons applied biweekly with little intermission. During the summer and autumn of last year she took ichthyol tabloids regularly for four months, with the result that the tube returned to its normal condition, but the ovary still remained very much enlarged and acutely sensitive to touch. On February 14 she commenced to take parotid palatinoids three times a day. On March 3 following she called to report herself, when I found the ovary distinctly smaller and less tender, but she had had menorrhagia for twelve days. On April 2 I saw her again, when the ovary was still further improved in every respect, and she expressed herself as feeling better in health than she has done for over eight years.

The following notes of cases have been handed me by Dr. MacGregor:

"Maggie H., aged nineteen, consulted me on March 9, 1896. She complained of great pain at the beginning of and during the menstrual flow, also pain over the right ovary, with a feeling of weight in the abdomen. She has suffered more or less for the last two years. Regular twenty-eight days' type, the flow, however, lasting for seven days. She had leucorrhœa, colored discharges, and suffered from lowness of spirits. P. V. examination gives the following: Tubes on both sides enlarged, swollen, and extremely tender to pressure. The ovary on the right side swollen and very painful to the touch. She has had ichthyol tampons applied twice a week, and has been taking parotid palatinoids thrice daily. When I saw her, on April 29, the patient said she had had no pain at her menstrual period, and the swelling of the right ovary and tube were much diminished, while the tenderness

to touch was almost gone. The patient stated that she felt ever so much better."

Mrs. R. Fife, aged twenty-nine, consulted me on April 11, complaining of constant backache, leucorrhœa, pain over both iliac regions, the pain shooting down her limbs, frequent desire to pass water, and the bowels constipated. The patient looked thin, careworn, and had an anxious expression. She stated that she had not felt well for eight years. She has had three children and one miscarriage. Her last confinement was two and a half years ago, when the labor was tedious. She has been married for ten years. She suffered from dyspepsia, slept badly, and was much depressed in spirits. Physical examination disclosed torn perineum, lacerated cervix on left side, chronic endometritis, subinvolution, retroflexion, and tubes and ovaries swollen and tender on left side. Treatment was commenced at once, iodized phenol being applied to the interior of the uterus, which was replaced and a glycerin tampon inserted. She was put on parotid palatinoids, and at the end of two weeks the glycerin tampons were changed for ichthyol ones. When I saw the patient on May 9 her condition locally had undergone a marked change. The tubes and ovaries were no longer tender, their congestion had markedly diminished, while the leucorrhœa had almost entirely disappeared. The patient expressed herself as feeling ever so much better, which she looks, for she has put on flesh and looks bright and cheerful.

I have detailed these few cases, which *are not* selected, and are given as examples of the therapeutic effects of the gland-treatment of the different diseases enumerated. When we come to consider the close physiological relationship of one structure with another, and the peculiar effects of marriage on the one hand and virginity on the other, the latter rendering certain organs much more prone to disease than would have been the case had these been brought into functional activity, we are naturally led to conclude that something may be done to combat the tendency to pathological change which would appear to take place in these circumstances, so that an immense field for observation seems to be opening out and will surely repay any amount of time expended upon elucidating these recondite physiological and pathological problems.

A PLEA FOR MODERATION IN OUR STATEMENTS REGARDING THE CONTAGIOUSNESS OF PULMONARY CONSUMPTION.[1]

BY VINCENT Y. BOWDITCH, M.D.,

Assistant in Clinical Medicine at the Harvard Medical School; Assistant Visiting Physician at the Boston City Hospital.

Gentlemen of the American Climatological Association,— Recent events in Boston have impelled me to say a few words to you at our anuual meeting with the hope that by discussion of the subject we may have some influence directly or indirectly upon the community, especially the laity, in checking what has of late frequently seemed unnecessary alarm about the contagiousness of tubercular disease, especially in its pulmonary form.

In what I am about to say I trust that I shall neither seem to disparage the great advance in medical knowledge due to bacteriology, nor to discourage in any way all reasonable efforts to prevent the spread of tuberculosis. I firmly believe that in another generation we shall see a diminution in the general death-rate from this disease, largely due to the precautions which are so earnestly advocated by the mass of the profession. I only wish to protest against the unreasonable and often, as I deem it, cruel attitude taken by the laity and even by physicians in their desire to prevent the spread of the disease.

Not many weeks ago the people in Boston were treated in their local papers to hot discussions, which have been carried on at the City Hall, relative to the proposed enlargement of a certain institution in the suburbs for the shelter of poor consumptives.

I have been surprised and even shocked to read the statements of some medical men at these hearings, to say nothing of the extravagant words of members of the laity, mostly composed of people living near the institution, who in their desire to rid themselves of what seemed to them an objectionable neighbor, have given vent to most unwarrantable statements which serve to give the public unnecessary alarm, and create that state of constant apprehension which I believe is a potent factor in the production of disease.

The only excuse that I can conceive of for the marked opposition to this special institution is that at one time it was not conducted as a well-regulated hospital for consumptives should be, and that before we knew

---

[1] Presented at the annual meeting of the American Climatological Association at Lakewood, N. J., May 13, 1896. Printed also in the *Boston Medical and Surgical Journal* of June 25, 1896.

the importance of destroying the chief source of infection—viz., the sputa—patients were allowed to expectorate upon the grounds about the building, a method which I have lately been told by one of the trustees has been absolutely prohibited on pain of dismissal at the first offence.

Not long after these statements had appeared in the papers I was asked by a layman my opinion upon the subject of the contagiousness of consumption. I told him that doubtless it was a contagious disease under certain conditions, but that with certain precautions, chiefly in the strict care of the sputa, the dangers from contagion were reduced to a minimum. It then came to light that he was one of the opponents of the institution about which such a controversy had occurred, and he almost angrily turned to me and said, "It is abominable that such hospitals should be allowed anywhere in our midst. They are a source of danger to all."

The gentleman seemed to be oblivious to the fact that these same consumptive patients confined in the walls or in the grounds of the institution were an infinitely less source of danger than if allowed to roam at large, spitting in the street-cars, public places, or even in their own homes. His position represents that of thousands who hold the same unreasonable views, and who in their fear of contagion forget the sympathy and kindness due to those who are suffering from consumption; and for these views the extravagant or careless statements, I regret to say, of our own profession are largely to blame.

When a physician asserts that consumption is "as contagious as smallpox," and that "hospitals for consumptives are a source of danger to the whole surrounding community," I consider him culpable for making perfectly unwarrantable statements that cannot be borne out by facts.

It has been proved by observation in the communities near two of the largest sanitaria for consumptives in the world—viz., Görbersdorf in Silesia, and Falkenstein near Frankfort—that consumption has lessened in amount among the entire population since the introduction of the sanitaria there, largely due, it can justly be said, to the strict hygienic rules which are used at the sanitaria for the disposition of sputa, and which are taught to the inhabitants in the surrounding villages.[1]

It is doubtless perfectly true, on the other hand, that in various "open resorts" for consumptives where strict methods for disinfection of the hotels and boarding-houses are not enforced, the death-rate among the natives from consumption has increased greatly, the most striking cases being those of Mentone and Nice, where, according to statistics, consumption has greatly increased since these places have become such common resorts for phthisical patients, many of whom through carelessness or ignorance become sources of contagion to others.[2]

---

[1] Römpler, "Beiträge zur Lehre von der chronischen Lungen Schwindsucht."

[2] (*a*) Bennett "On the Contagion of Phthisis Pulmonalis;" (*b*) S. A. Knopf, Letter from Dr. Balestre, quoted in "Les Sanitaria," Traitément et Prophylaxie de la Phthisis pulmonaire," p. 173.

Whether this increase of consumption among the natives is due to the lack of strict hygienic rules among the hotels and boarding-houses for phthisical patients in Nice and Mentone or because the native population have changed their former out-of-door occupations to the more confined life of hotel attendants may be justly questioned, and yet the difference between the experience at Mentone and at the two great sanitaria just mentioned is very striking.

In a very interesting paper entitled "A Study of the Infectiousness of the Dust in the Adirondack Cottage Sanitarium,"[1] Dr. Irwin W. Hance has given some results which prove how little danger there is of infection in properly regulated institutions.

Guinea-pigs were inoculated with the dust taken from various rooms of the sanitarium, and tuberculosis was found to be present only in the animals who had been inoculated with the dust from the room of a careless patient who had been complained of for spitting on the floor,—a striking example of the absolute necessity of cleanliness in this particular.

In the large hospital for consumptives at Brompton, London, where the same strict hygienic rules are maintained as at the great sanitaria of Germany, the percentage of hospital attendants who have developed phthisis is very small indeed, according to the statements of Dr. C. T. Williams.

Directly bearing upon the subject in question are the scientific and very important experiments of Delepine and Ransome with reference to the germicidal effect of various substances upon the bacilli of tuberculosis. In these experiments exposure to the full rays of the sun for a comparatively short time (a few hours) proved the most efficient germicide of all, it being sufficient to render the bacilli completely inert, the inoculated animals showing no signs of tuberculosis. The experiments were made, it is important to state, with dried sputa, and not with simple cultures of the bacillus.

They found, moreover, that the one-to-ten or one-to-a-hundred solution of chlorinated lime proved to be the most efficient agent for disinfecting the clothing and the walls and floors upon which the sputa had been expectorated.

Since the publication of Ransome's paper I have been rather surprised that no other bacteriologists have experimented in this special direction, or at least that I have been unable to find published accounts of such experiments. A. K. Stone and others have proved the extreme vitality of the bacilli when not exposed to the sun, sputa dried for three years in a dark place having produced tuberculosis in animals, but we need the results of more extensive experiments in the direction Ransome has taken, the importance of which in the practical every-day dealing with consumptive patients can hardly be over-estimated.

---

[1] New York Medical Record, December 28, 1895.

As a result of the experiments of Ransome, it is certainly a legitimate doubt to come to our minds as to how far we need fear infection from sputa which is expectorated onto the open ground exposed to the full rays of sunlight. Not that I would relax one iota in the restriction of the disgusting habit (to say the least) of spitting publicly anywhere; it is only a question as to its danger under the condition of exposure to the sun's rays.

Thus we have scientific facts to help us in trying to show the laity that the consumptive need not be treated like a leper or as one affected with the plague, but that moderate measures will prevent his being a source of danger to those about him.

It is doubtless natural that the ordinary hotel-keeper should prefer not to receive a guest far advanced in consumption for reasons other than fear of infection, but I have seen too much of the sadness arising from the fairly brutal disregard of the poor sufferer's feelings in some cases not to make me wish to beg for moderation in our statements to the laity, lest we be guilty not only of making assertions not based on scientific truth, but also of adding unnecessarily to the mental suffering of those who are already burdened with physical ills.

I can never forget the pathos of a former consumptive patient of mine now dead, as he told me of his experience once in an Adirondack hotel, the proprietor of which came to him and told him that he must leave, when feeling forlorn and ill, "because he had a cough," and this instance is but one of many, as almost any specialist for chest-diseases can testify.

In conclusion, let me emphasize my own position in this matter, lest by any chance I should be misunderstood as wishing to relax in methods for perfect cleanliness about the consumptive patient. I advocate most firmly the destruction of the sputa by fire or other methods of disinfection. I believe also that the rooms occupied by a consumptive patient should be thoroughly cleansed with chlorinated lime or carbolic acid,—in short, that all reasonable methods should be adopted to kill the germs of the disease, but I wish to refute the statements that *properly regulated* consumptive hospitals are sources of danger to the community, when I believe them to be exactly the opposite, as shown by statistics. I wish also to plead for the consumptive who in his exile is made to feel the forlornness of his condition still more keenly by the selfishness of those who, in their desire to escape the possibility of infection, shut their doors in his face, as it were, utterly regardless of the mental suffering they are inflicting.

Future experimentation will doubtless throw more light upon the subject, but meanwhile let us in our zeal as physicians be careful not to make statements which we may be obliged later to retract as not being founded upon scientific truths.

THE INFLUENCE OF CLIMATE ON GENITO-URINARY TUBERCULOSIS.[1]

BY JOHN C. MUNRO, M.D.,

Boston.

In the cities and large towns along the Atlantic seaboard tuberculosis of the kidneys, bladder, prostate, vesiculæ, epididymes, or tubes is far from rare; it is frequently overlooked, especially in the earlier stages, and often, when recognized, the disease has created so much havoc that nothing can be done beyond making the victim comfortable. The pathetic, relentless suffering in the later stages in such cases warrants the plea that physicians should endeavor to detect the invasion as early as possible, and that no rational treatment promising relief should be neglected.

For a long time it has been recognized that the class of patients under consideration is best treated by a careful out-door country life in conjunction with surgical interference when necessary or possible. If this is true, and there can be no doubt of the fact, cannot more be gained by sending such cases, at least in the incipient stages, to a climate where other forms of tuberculosis are benefited or cured?

In order to answer this question, a circular was sent to the members of this association requesting their views and experiences, and the writer takes this opportunity to express his gratitude for the many replies sent him, so full of kindly interest.

Of seventy-five responses about fifty are more or less replete with valuable data, but, as it is impossible to give credit to each shade of difference and interpretation, it has seemed best to condense the data and treat them as if they were the result of a single physician's large and varied experience. Reports of a number of interesting cases in support of one view or another have been sent, but it is not practicable to incorporate them in a brief summary.

The views of the majority on any one question are, perhaps, given undue prominence; the attempt, however, is made to give equal consideration to the opinions of the minority, no matter how small it may be.

Of the reply to the first question—"Are patients with tuberculosis of the kidney, bladder, epididymis, prostate, or vesiculæ benefited or injured by climatic treatment"—there is scarcely any doubt. There is no reason why the situation of the disease should form an exception to the rule, especially if the general resistance and the nutrition are improved. The

[1] Read at the annual meeting of the American Climatological Association at Lakewood, N. J., May 12, 1896.

benefit is, of course, indirect for the most part, but it can be materially aided by proper local treatment, not necessarily operative in the majority of cases.

The rate of improvement is not so rapid as it is in pulmonary phthisis, and it may be that, for reasons unjustly ascribed to the climate, cases occur in which harm follows this method of treatment. But in the East, patients are much improved if not often cured by an out-door life, and it is not difficult to understand that the benefit might be increased by emigrating to that part of the country where the opportunities for, and the benefit from, an out-door life are naturally greater.

One or two correspondents write that they have never seen any good follow climatic treatment in the class of cases under consideration, but their experience differs so much from that of the other members that one is constrained to believe that they have, unfortunately, seen only the late forms of the disease, where any treatment is hardly more than palliative. It is to avoid sending this very class of cases that the good results from a healthy climate in the incipient stages should be emphasized. A few writers contend that joint tuberculoses do well without regard to climatic influences; but it must be borne in mind that the genito-urinary form is less localized, more easily disseminated, and cannot be placed in the same category as the former. Furthermore, there is good reason to believe that joint cases are better treated in a high dry climate.

"Do patients undergoing climatic treatment for pulmonary tuberculosis develop, commonly, a genito-urinary tuberculosis when the pulmonary lesions are disappearing?"—That is, do physicians in healthy climates see genito-urinary tuberculosis as frequently as we do in unhealthy (tuberculous) climates when patients exhibit practically no other manifestations of an active invasion of the tubercle bacilli? Apparently such a development is very rare. Four correspondents report having seen single cases only during many years of practice, while primary genito-urinary tuberculosis is comparatively unknown,—a condition far different from that which obtains in tuberculous regions.

"Does pulmonary tuberculosis tend to develop in patients undergoing climatic treatment for genito-urinary tuberculosis?" So few patients, proportionately, are sent for treatment of genito-urinary tuberculosis alone that a definite answer cannot be given, but there seems to be no noticeable tendency to invasion of the lungs in the early stages, and in all probability if such a tendency did exist, it would be retarded or prevented in a suitable climate.

In advanced cases, on the other hand, pulmonary invasion is as common in one climate as another, but how far such a complication may be retarded cannot be answered without further investigations. In general, most observers agree that there is very little interrelation between the disease in the lungs and in the uro-genital tract.

"After apparent cure from genito-urinary tuburculosis can patients

ever return to their homes?" Probably to a small extent in selected cases, when the cure has lasted for many months, where the home surroundings will be of the best, and provided the patient is persistently and carefully watched. The permanency of the cure, though less frequent, is apparently as well established as in pulmonary phthisis; it is not uncommon, however, to see instances of permanent arrest without permanent cure.

The return home should be regarded in the light of a dangerous experiment, and the change should invariably be advised by the physician in immediate charge.

Where the arrested lesions can be entirely removed by surgical interference, the chances of a safe return to the former home are much increased.

"Do patients with advanced genito-urinary tuberculosis,—*e.g.*, abscess of the kidney, testes, vesiculæ, etc., ever recover their general health?" Occasionally with the aid of surgery, advanced (abscess) cases do recover, but it is doubtful if the proportion is much greater in the healthy than in the unhealthy climate. After surgical interference in an unhealthy climate, the chances of a return or of an invasion elsewhere would be lessened by emigration to an anti-tuberculous part of the country.

"Must the same precautions, as regards exercise, diet, rest, etc., that are given to phthisical patients, be given to patients with genito-urinary tuberculosis when emigrating to high altitudes?" Practically the same precautions should be exercised in directing the daily life of such a patient as in the case of pulmonary tuberculosis, especial attention being given to the diet where there are renal or vesical lesions, and to proper exercise where the prostate or vesiculæ are involved.

Over-exercise will produce general systemic or cardiac disturbance in the same way that it does in phthisical patients, and the risk of general infection cannot be disregarded in the one form more than in the other.

These patients are less amenable to treatment than are those with pulmonary trouble, and this fact must be considered when directing their habits of life.

"Is there any one type of climate especially adapted to the treatment of genito-urinary tuberculosis?" There is no one climate or locality suitable for all cases, the general rule being that, where pulmonary cases do well, it is safe to send genito-urinary cases.

When, however, the disease is limited to the kidneys or bladder, a climate equable, warm, and not too dry should be selected; where out-door life is most possible, and where the drinking water is of the best. Such conditions do not exclude sea-shore resorts, like Atlantic City, Nassau, the Bermudas, Jacksonville, etc. In case the immediate coast is not desirable, proper conditions can be found in regions like San Antonio, Augusta, Thomasville, Aiken, Southern California, etc.

A high, cold, dry climate is unsuitable, particularly in renal cases, if a concomitant pulmonary lesion is the point of therapeutic attack, because the vigorous out-door treatment in zero weather puts too much strain on the

kidneys, and the latter organs are in a state of constant irritation, even though there is steady improvement in the chest. Even without an attendant focus in the lungs such a climate should be chosen with great caution, and with a full realization of the risk of overworking the kidneys during the colder months of the year.

Patients with the lesion limited to the epididymis or to the vesiculæ can generally be treated best in a high, dry climate like Colorado, provided, of course, there is no cardiac contraindication.

Prostatic and bladder types do well in either a low or a high altitude, care again being taken against exposure in the cold months. These cases are also benefited by treatment at the various baths, like the Hot Springs of Virginia, or Arkansas, or the Hudson Hot Springs. A hot, dry, desiccating climate that naturally induces the various hepatic and pelvic congestions is unsuitable: there the acute venereal diseases are stubborn to treatment, and for the same reason tuberculous lesions would do badly.

In conclusion, we may say that genito-urinary tuberculosis is benefited by climatic treatment.

That patients should be sent to healthy climates in the incipient stages more frequently than has been the custom heretofore.

That this form is less amenable to treatment than pulmonary phthisis in the latter stages, but that the results of surgical interference can be improved by climate.

That moderately dry, equable, mild climates are suitable to the majority of patients, the high, colder climates being reserved for selected cases.

That whatever climate is chosen, the benefits depend upon proper food, hygiene, exercise, and fresh air, as in pulmonary phthisis.

ARTERIO-SCLEROSIS AMONG THE INSANE.

BY E. D. BONDURANT, M.D.,

Assistant Superintendent of the Alabama Bryce Insane Hospital at Tuskaloosa.

Those forms of arterial disease and degeneracy embraced in the terms "arterial sclerosis," "chronic endarteritis," "atheroma, etc.," are thought to have their beginning in certain inflammatory changes, regarding the exact nature and etiology of which some confusion as well as diversity of opinion exists. The disease, whatever its nature and origin, while it may in some cases involve all the coats of the blood-vessel, has its usual and characteristic situation in the intima, and for its usual and characteristic effect, sclerosis and loss of resiliency in the arterial wall. The process may be a diffuse one, but it is most commonly distributed irregularly, the inner surface of the vessel exhibiting patches of sclerosis separated by areas of

comparatively healthy tissue, or is furrowed or wrinkled with irregularities. In many cases also there occurs a deposition of new material within the affected area of the vessel wall, this newly-formed tissue being in some cases hyaline and nearly structureless ("hyaline degeneration"); in others containing round cells, few or many, embedded in a hyaline or gelatinous matrix. This newly-formed tissue, furthermore, is very prone to early and extensive, slowly progressive, degenerative changes, fatty or, less frequently, calcareous in nature, which render the diseased areas more distinctly visible, giving rise to the familiar "atheromatous plaque." In later stages there is often breaking down and disintegration of the atheromatous patch with formation of shallow depressions, having ragged, irregularly contoured walls, —"atheromatous ulcers." A possible concomitant result of this disintegration is the formation of *emboli*, bits of the eroded wall being carried away by the blood-current to lodge in some smaller artery. Another effect of this degeneration and partial destruction is, necessarily, a localized weakening of the arterial wall favoring rupture with hemorrhage, or in certain cases resulting in the development of aneurism.

In those cases in which the degenerative change is calcareous in character, the formation of irregular chalky masses, or of smooth "calcareous plates," is a common result. In extreme cases these deposits may involve the entire circumference of the vessel for long distances, rendering the arterial wall so brittle that instead of bending it fractures under application of force. The fatty and calcareous degenerative changes are often combined; indeed, in the more serious cases this is the general rule, the deposition of calcareous matter appearing as a later stage of the fatty degenerative atheroma.

The patches of atheroma are raised, usually encroaching slightly upon the lumen of the artery, although in ordinary cases they interfere only in very minor degree with blood-flow. In some instances, however, the processes which result in formation of new tissue seem especially active, the affected areas bulge greatly, seriously obstruct the flow of blood, or even eventually obliterate the lumen of the vessel. This is the "endarteritis obliterans" of the text-books.

This chronic arterial disease begins usually in the aorta, and in some cases is confined entirely to the aorta and its larger branches, although in most cases in which any symptoms of arterial sclerosis are discoverable during life, the disease is found more widely distributed, in some instances affecting the larger venous walls as well as the smaller arteries throughout the body.

The frequency with which these degenerative arterial diseases are met with among insane people, as well as their correlation with certain more or less characteristic clinical symptoms, mental and physical, has already been commented upon more than once, and will become sufficiently evident to any who study the disease even from its clinical aspect alone; more especially to those who have the opportunity of observing cases during long

periods, and of following fatal cases to the autopsy table and confirming or correcting clinical diagnosis by post-mortem examination.

A hospital for the insane offers a peculiarly favorable field for the investigation of such forms of chronic disease as the one under consideration, since a large percentage of the patients remain under treatment for long periods. And where all cases are given a careful physical examination at time of admission, followed subsequently with reasonable care, and post-mortem examinations made in a large proportion of the fatal cases, an amount of material bearing upon the several aspects of the arterio-sclerotic question must necessarily accumulate. It is with a view of briefly recording some of the results of our observation of this disease among the insane at this hospital that this report is made.

While we have the records of several thousand cases of insanity in which one or more physical examinations have been made, including in every case examination of the heart and blood-vessels and analysis of the urine, chemical and microscopical, it is intended here to deal chiefly with those cases in which post-mortem examination has removed all doubt as to diagnosis.

At the two hundred consecutive autopsies here used as the basis of our study we find that the macroscopic examination included the condition of the heart; the aorta and its larger branches; the coronary arteries; the arteries of the base of the brain,—basilar, circle of Willis, and larger branches of the same,—and the large veins. In about one hundred and fifty of the cases subsequent microscopic study of the kidneys was made, and in a smaller number sections of the brain, of the liver, spleen, and other organs were made and examined with the purpose of discovering the condition of the smaller arterial and venous twigs.

To give even a brief outline of the pathological changes noted in all of these cases, or even a synopsis of the condition of the circulatory system alone, would extend this paper to a quite unreasonable length. The cases will therefore be summarized and studied collectively. An analysis of the two hundred cases results as follows:

Frequency of Arterial Sclerosis and Atheroma.—About thirty-five per cent. of our cases show either no macroscopic evidence of arterial disease or the abnormalities are confined to a very few pale, inconspicuous yellowish patches in the arch of the aorta: only about fifteen per cent. of the two hundred cases are *absolutely free* of the disease in some stage.

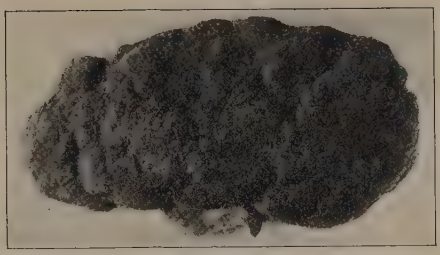
Sixty-five per cent. show distinct arterio-sclerosis, something more than one-half of these exhibiting atheromatous patches or sclerosis of the aorta, without extension of the disease to the smaller vessels; the other smaller half, about twenty-eight per cent. of the whole number examined, show the degenerative change in a high degree in the aorta, and the lesion is detected in the smaller arteries. The veins are rarely involved, and in no case to any marked degree.

Our cases, then, fall into three groups nearly equal in numbers: one

Fig. 1.

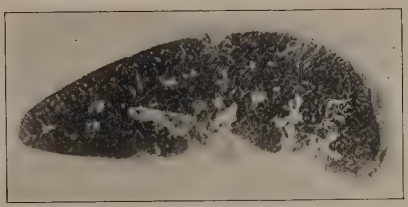
Inner surface of abdominal aorta, one-half natural size, in which there is sclerosis with atheroma and calcareous degeneration. From a case of terminal dementia with general arterio-sclerosis.

Fig. 2.



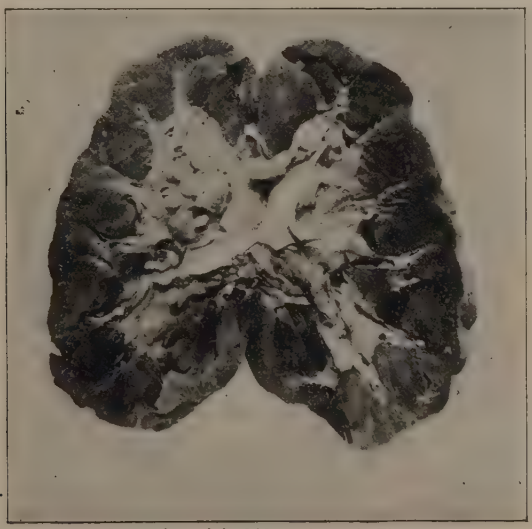
Arterio-sclerotic contracted kidney, showing characteristic red granular surface remaining after removal of the capsule. Four-fifths natural size. From same case as Fig. 1.

Fig. 4.



Cut surface of contracted spleen, from same case as Fig. 1. Four-fifths natural size.

Fig. 3.



Cut surface of the kidney shown in Fig. 2.

showing practically no arterial disease; one, slight involvement of the larger arteries; the third exhibiting well-marked and widely diffused degenerative and sclerotic change throughout a considerable portion of the arterial system. Of course, these groups shade almost imperceptibly into one another, the lesions in group three being obviously a later stage of the milder disease shown in group two, and this second or transition group passing by impercepible gradations into those cases included in group one, where the disease is shown in pale, scarcely visible patches in the aorta, or in which examination is entirely negative.

Race.—Of the whole number, one hundred and thirty-one of the cases were white, sixty-nine colored. The percentage of atheromatous disease was found to be somewhat greater among the negro patients than among the white, a difference which is more significant if the fact be taken into consideration that the average age at the time of death was greater among the whites. Attention has previously been directed to the fact that arterial degeneracy is especially common among colored races, and our results seem to corroborate this view.

Sex.—The *females* of both races seem more liable to the disease than do the males, contrary to what is usually taught; the difference, however, is slight, and the number of cases not sufficiently large to establish a general rule. I would mention in this connection, however, that, as previously reported, we have found renal diseases also more common among the *females* of both races.

Age obviously plays an important part in the development of arterial degeneracy, the average age at time of death of the patients showing no disease being thirty-two; of those exhibiting acute early stages of the affection, forty-one; of those in whom the disease was well advanced and widely diffused, fifty-five. The youngest patient in whom well-marked atheromatous disease of the aorta was found was twenty-one; the youngest showing a high grade of the disease with extensive distribution was forty-three.

Causes of Death.—An analysis of the causes of death in the two hundred cases brings to light some interesting facts. Among the non-atheromatous the deaths were chiefly due to tuberculosis, acute diseases, including acute nephritis and epilepsy, cerebral hemorrhage, heart-disease; chronic renal affections being conspicuously absent. In the second group the causes of death are tuberculosis, acute diseases, nephritic troubles, both acute and chronic, valvular heart lesions, general paresis, and one death from cerebral meningeal hemorrhage, with several other instances of subdural effusion of blood. When we reach group three—the markedly atheromatous—chronic forms of renal disease become conspicuously frequent, and of the fifty-five cases in this group, five died directly from intracranial hemorrhage, and in eleven other cases subdural hemorrhage ("pachymeningitis interna hemorrhagica") was noted. Heart complications were also more common. In short, the non-atheromatous die of acute disease, and suffer rarely from chronic renal disorder, heart complications, and cerebral hemorrhage; the

atheromatous die of chronic diseases, renal especially, have frequent heart disorder, and cerebral hemorrhage is common.

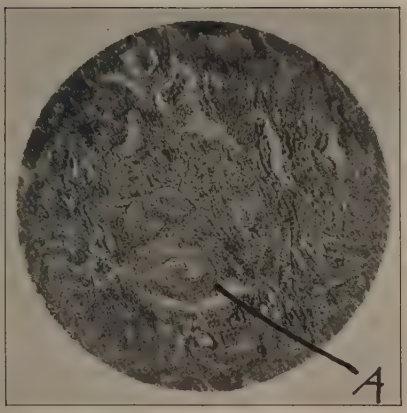
Character and Distribution of the Lesions.—As above noted, in about one-third of the whole number of cases examined, the lesions are confined to the aorta, favorite situations of the splotches being the orifices of the intercostal arteries, the bifurcation of the abdominal aorta at the pelvic brim, and the first inch of the aorta, near the bases of the heart-valves, and around the openings of the coronary arteries; but in those cases in which the disease in the aorta is at all well marked, the degeneration can be traced into the smaller arterial branches.

Thus, in fifty-five atheromatous cases in group three, there was sclerosis and atheroma of the coronary arteries in thirty-six, of the larger cerebral arteries in thirty-five, and in the forty-two cases of this group in which sections of the kidneys were made and examined with the microscope, disease of the renal arteries was noted in thirty-six instances. No cases showing disease of the coronary arteries, of the cerebral arteries, or of the smaller renal branches, failed to show the lesion in a higher degree in the aorta. Disintegration of the atheromatous plaques, with the irregular, depressed "ulcers" consequent therefrom, were noted in five cases only; in none of these were emboli discovered. Calcareous plates or irregular, chalky deposits were much more common,—seen in eleven of the fifty-five cases; and in two cases many of the arteries, including the cerebral, could be broken like pipe-stems, the entire wall being infiltrated with calcareous matter, rigid and unyielding. In one case a large aortic aneurism was found.

Some morphological differences exist between the sclerotic degenerative changes noted in the larger arteries and those occurring in some of the smaller vessels. It is especially in the larger vessels that the atheromatous areas, ulcers, calcareous plates, etc., are seen, and here the disease affects the inner arterial coat in particular. In the smaller vessels of the kidney, heart, liver, spleen, etc., the histological changes commonly assume the form of "arterio-capillary fibrosis," described in the oft-quoted work of Gull and Sutton. Here there is a diffuse fibroid or hyaline thickening of the adventitial coat as well as of the intima, and the muscular layers show frequent atrophic changes, these changes in the blood-vessel wall being often associated with thickenings and general increase in connective-tissue framework of the several organs.

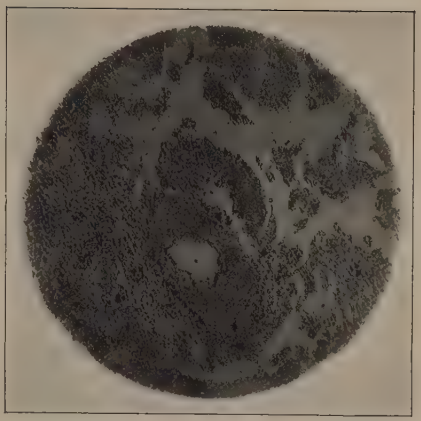
The changes of atheroma and "arterio-capillary fibrosis," while differing in histological character, have a probably common etiological origin. The differences seem to depend largely upon the structure and relations of the vessel affected. When the arteries lie comparatively free, having not very intimate relation with surrounding tissues (aorta and large arteries in thoracic and abdominal cavities, meningeal arteries, etc.), the irregularly distributed atheromatous patch is common, and adventitial thickening is not pronounced. When the arteries lie within and intimately connected with

FIG. 5.



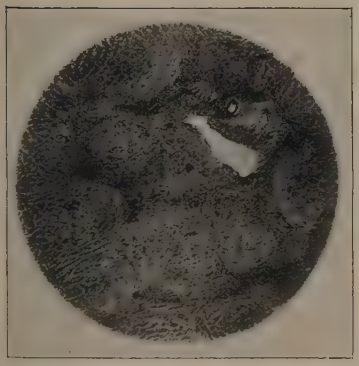
Section of arterio-sclerotic kidney showing at *A* a transverse section of small artery with hyaline-fibroid thickening of its walls, × 250. From a case of general arterio-sclerosis with atheroma and degenerative changes in entire arterial system.

FIG. 6.



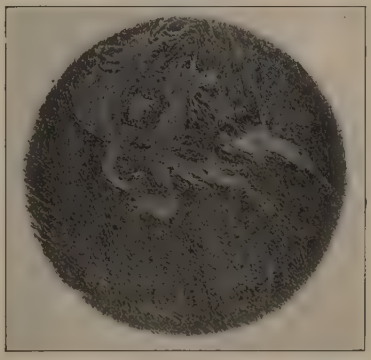
Transverse section of small artery in spleen, showing hyaline thickening of walls of the vessel. From a case of general arterio-sclerosis, × 250.

FIG. 7.



Cirrhotic liver, with thickening of walls of the blood-vessels, × 50. From a case of general arterio-sclerosis.

FIG. 8.



Section of wall of left ventricle of the heart, showing fibroid thickening of small blood-vessels, × 150. From a case of general arterio-sclerosis.

the stroma and cells of the glandular organs, kidney, liver, etc., adventitial thickenings and the diffuse hyaline and fibroid degeneration above referred to become more evident.

Whether in these glandular organs the thickening begins in the blood-vessels and extends secondarily to connective-tissue framework, or, occurring primarily in the latter, extends at a later period to the blood-vessels, is not in all cases determinable; probably in many instances the changes are simultaneous, and due to a common cause. In some undoubtedly the primary lesion is in the vessel walls.

Heart.—A frequent situation of early atheromatous disease, as noted above, is the first inch of the aorta, so it is not surprising that, as the disease advances, it invades not only the remainder of the arterial system, but extends to the valves and endothelial lining of the heart as well. A large percentage of the cases in group three show atheromatous degenerative changes in small, oval or irregular, yellowish, raised or thickened patches upon that segment of the mitral valve which is, at its base, continuous with the inner surface of the aorta, and, in a smaller number of cases, the lesion is noted upon the remainder of the mitral valve, upon the cusps of the aortic valve, and upon the endocardium. The bases of the aortic cusps are not rarely involved. Calcareous masses and plaques upon valves and endocardial lining have also been noted, and in some cases where the yellowish atheromatous plaque was not noticeable, a diffuse sclerosis and stiffening of the valves of the left side of the heart have been present. This extension of the disease to the valves of the heart was noted in twenty-six out of the fifty-five atheromatous cases.

The frequency of atheroma of the coronary arteries has been previously alluded to. The heart muscle, in many cases, probably in consequence of the increased demand made upon it as a result of the diminished elasticity of the arterial system, as well as, in certain cases, by insufficiency of the cardiac valves, becomes hypertrophied, the weight in twenty-five per cent. of the fifty-five cases being more than twelve ounces, the six largest hearts weighing, freed from blood-clots, twenty-six and a quarter, twenty and a quarter, nineteen and three-quarters, eighteen and three-quarters, sixteen, and fifteen ounces. This cardiac hypertrophy, however, is not by any means a universal accompaniment of arterial disease or of valvular heart lesion, even when these two are combined with arterio-sclerotic nephritis, for of our atheromatous cases, quite thirty per cent. showed hearts weighing less than eight ounces; and among these were many instances of valvular heart lesion also. These small atrophic hearts were usually found in subjects in which a general marasmatic state prevailed; many of them, undoubtedly, showed degenerative changes in their muscular tissue. Reckoning all together, the average weight of the heart among the atheromatous is less than among the non-atheromatous.

Among some seven hundred white patients examined by my colleague, Dr. Ruffin A. Wright, in course of an inquiry into the cardiac complica-

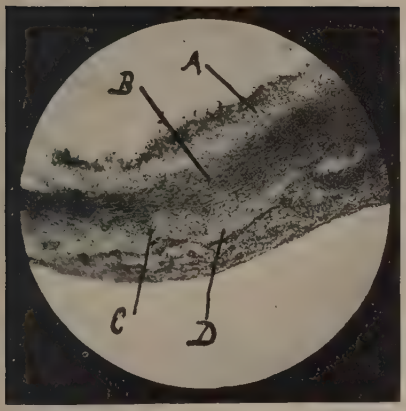
tions of insanity, evidences of organic heart lesion were discovered in about eleven per cent., and of this eleven per cent. a large proportion also exhibited some indication of arterial degeneracy; the proportion of cardiac valvular disorder among the non-atheromatous being infinitely less than among those showing diseased arteries. Of our fifty-five fatal atheromatous cases, cardiac lesion had been detected before death in *eighteen*. Almost without exception, the cases in which heart lesions had been recognized by examination before death exhibited at post-mortem examination some degree of arterial sclerosis.

Kidneys.—Practically every one of the atheromatous cases exhibited renal disease, the commonly noted condition being the "red granular" arterio-sclerotic contracted kidney, the organs being smaller than normal, firmer, of a dark red, capsule thickened and adherent, bringing away bits of tissue when stripped off, and leaving behind the characteristic "red granular" surface. The cut surface of the kidney is red, cortex irregularly thinned, the markings indistinct, pyramids dark colored. The chief lesions shown under the microscope are: thickening of interstitial tissue, thickening of arterial walls, of capsules of glomeruli, destruction of many tufts through degenerative changes in their component vessels, and degenerative changes in the tubal epithelial cells, the latter lesion varying much in different cases. This description would apply with scarcely a change to about two-thirds of the kidneys in our cases of endarteritis. The remaining third, while almost without exception exhibiting disease of their arteries, depart in some particulars from the arterio-sclerotic type. Many of these variations are obviously due to intercurrent acute forms of nephritic disease, to which, naturally, the arterio-sclerotic kidney is as liable as is a more nearly normal organ, or even more liable. In seven of these atypic cases, in which there was disease of the renal arteries without the characteristic "red granular" appearance, the causes of death were peritonitis (two cases), pneumonia (two cases), septicæmia (one case), and miliary tuberculosis (two cases), in each of which seven cases there was, in consequence of the acute disease, an acute exacerbation of renal disorder.

In only two cases was there pronounced disease in the aorta and in the smaller arteries of other portions of the body—coronaries, cerebral vessels, etc.—without degenerative or fibroid changes in the renal vessels. In the forms of early and but slightly advanced atheroma included under group two, however, the renal vessels were, as a rule, free from disease. In no instance was a "red granular" kidney found, or a kidney showing any degree of degenerative change in arteries, or any "arterio-capillary fibrosis," without atheroma in other portions of the arterial system.

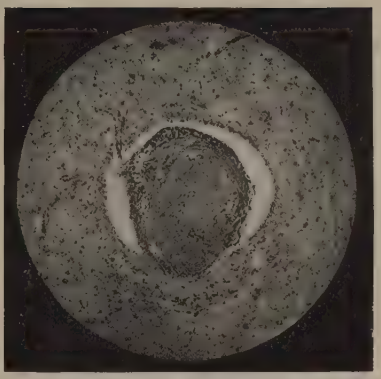
Among the cases free of arterial disease, or showing this disease in minor degrees, the average weight of the kidneys was greater, and the percentage of nephritic disease somewhat smaller. The renal disease, too, when present, was most often of an acute form, or of a chronic parenchymatous form, without affection of the renal blood-vessels.

Fig. 9.



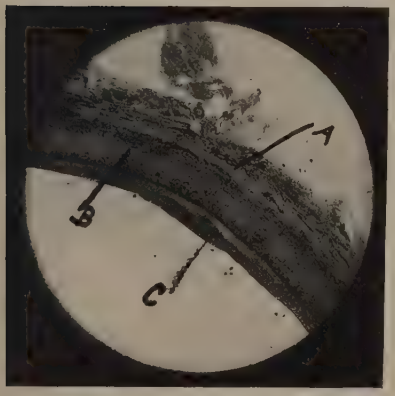
Portion of the wall of middle cerebral artery, from same case as Fig. 1 *et seq.*: *A*, adventitia; *B*, media; *C*, lamina cribrosa; *D*, greatly thickened intima, its innermost portion thickly infiltrated with round cells. Leitz, No. 4 objective, No. 1 ocular, × about 175.

Fig. 10.



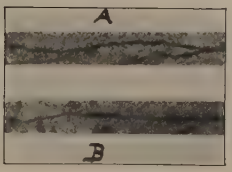
Transverse section of small artery in corpus striatum, from a case of general arterial degeneracy, with great dementia, dying of cerebral hemorrhage. There is irregular thickening of the arterial wall with narrowing of lumen of the vessel, × 175.

Fig. 11.



Section of wall of abdominal aorta through an "atheromatous plaque." *A*, adventitia; *B*, media; *C*, intima, at point of atheromatous thickening, × 60.

Fig. 12.



A, portion of dendron of a pyramidal cell in cortex cerebri, normal; *B*, portion of dendron of cortical pyramidal cell from a case of dementia with general arterio-sclerosis, showing fusiform swellings and denudation of gemmulæ. Berkley's phospho-molybdate of silver stain. Leitz, No. 7 objective, no eye-piece, × about 400.

The urine was found to contain albumin as well as renal tube-casts in every case showing arterial atheroma in an advanced stage.

Brain.—The condition of the brain in cases of advanced atheroma is commonly one of sclerosis and atrophy. Among the non-atheromatous or slightly atheromatous cases the average weight of one hundred and forty-five brains is forty-four ounces; among these were many general paretics. Among those who show atheroma in marked degree, fifty-five cases, the weight averages forty-two ounces. In many of these brains the atrophy, the shrinking of the convolutions of the vertex, gaping of sulci, general hardening of the tissue, etc., are extreme. The lightest of the atheromatous brains weighed thirty-two, thirty-three and one-half, thirty-four and one-quarter, thirty-five, thirty-seven, and thirty-seven and one-half ounces respectively. Occasionally a brain in which there is disease of the arteries will show no atrophy; occasionally atrophy of a brain will be noted without degenerative disease of the arteries, but usually when there is arterial degeneracy there is cerebral atrophy; when there is cerebral atrophy there is some degenerative arterial disease. The indications of disease in the histological elements noted in microscopic study of sections of the brain from cases of arterio-sclerosis are, briefly, those described in senile and terminal dementia,—destruction of many nerve-cells, degenerative changes in other nerve-cells, thickenings in smaller blood-vessels, changes in neuroglia-tissue elements, etc. The miliary aneurisms, upon the occurrence of which so much stress has been laid by some, have been conspicuous by their absence, or at least we have failed to detect them. A not uncommon lesion in advanced cases is granular thickening of the ependymal lining of the ventricles.

The pia-arachnoid has usually been found thickened, opalescent, tough, dense, œdematous, being often removable in large sheets without difficulty. A frequent lesion is intrapial or subdural hemorrhage, which, like intracerebral effusions of blood, have been rarely noted except in cases exhibiting disease of the arterial system. Thus, in our two hundred autopsies, nineteen instances of subdural or intrapial hemorrhage were discovered, and in eleven of these there was a high grade of atheroma throughout the arterial system; in seven other cases earlier stages of arterial degeneracy, and in one instance only was no degenerative change in the blood-vessels noted. In addition to these meningeal hemorrhages, there were five cases of intracerebral effusion, three of these occurring in basal ganglia or internal capsule, one in the white substance of a cerebral hemisphere, one in the pons. Each was the direct cause of death, as noted above, and in each there was disease of the arteries.

The very frequent occurrence of arterial disease among general paralytics has been made the subject of remark by Beadles and others. A review of the lesions noted post mortem in our cases of paresis confirms this opinion in so far as the frequent existence of arterial degenerative changes is concerned, almost every case of paresis showing some arterial disease. I would say, however, that in no instance have we found the degenerative changes

well marked, not one of our fatal paresis cases falling under our atheromatous "group 3." In two of the cases no arterial degeneracy was noted. The six other cases did exhibit an early stage of disease.

Condition of other Organs.—The *liver* has usually been found smaller and firmer than normal,—*i.e.*, cirrhotic,—and no case of hepatic cirrhosis without general arterial disease, as well as similar disease of kidneys, heart, brain, etc., has been seen.

The spleen also in the majority of cases is firmer, smaller, harder, more fibrous than normal, save in the cases dying of infectious disease. The suprarenal capsules are often dry, firm, shrunken, with brilliant yellow cortex and dark-red medullary substance, the color contrast greater than normal. The ribs, and to a less noticeable extent the other portions of the osseous system, are atrophic, softened, show diminution or even absence of inorganic salts, and break or bend easily.

The most striking general feature of the bodily condition is emaciation, with marasmatic atrophy, and the changes already familiar as accompaniments of senility, and this chronic degenerative disease in the arteries may be regarded as one of the most characteristic pathological features of that chronic, progressive, incurable disease, old age.

It is also worthy of note that the cases of endarteritis showing most typically the marasmatic state above referred to are usually those in which the nephritic complication is most pronounced. Occasionally, when renal or other complication is not pronounced, the subjects remain in a remarkably well-nourished state to the last.

Clinical Symptoms.—The existence of any considerable degree of arterio-sclerosis is generally recognizable during the life of the patient, although early stages of the malady do not make their presence manifest. In advanced cases there is the well-known sclerosis of the arteries, perceptible in radial, facial, temporal, and other arteries which can be felt. The arteries are also tortuous and the pulse harder and less compressible. The heart-sounds are apt to be roughened, and distinct murmurs are not rare. (Note above that in fifty-five atheromatous cases autopsied, heart murmurs had been recognized during life in eighteen.) The roughness is noted with both first and second sounds, there is accentuation of the aortic tone; the murmurs are chiefly systolic.

The *arcus senilis* is often present, and has not yet been by us observed in a case free from arterial degeneracy. Hemorrhagic or petechial spots upon the skin—most usually the forearms and the back of the hands—are common, and are obviously hemorrhages, and in many cases not obviously due to traumatism. One man, the subject of great arterial disease and dying of cerebral hemorrhage, had a crop of small, irregular hemorrhagic splotches over chest, face, and extremities two days before death; another had a similar abundant crop upon face, neck, and body, appearing without discoverable exciting cause, and slowly disappearing by absorption. A female patient having an extensive and well-marked arterial disease with

nephritic, hepatic, and cardiac complications, had, three weeks before death, an extensive hemorrhagic effusion into the skin of the abdominal wall, the splotch being something near one square foot in extent; it was gradually absorbed, passing through the stages of discoloration shown during absorption of blood effused after a bruise. These hemorrhages, when not due to trauma, we may regard as of angio-neurotic origin, but arterial degeneracy seems in either case necessary to their occurrence. We have noted *no case* in which there was no disease of the arteries.

Other symptoms shown in these cases are vertigo, buzzing in the ears, easy exhaustion, palpitation of heart, irregularity of same, attacks of syncope, etc., these occurring particularly where there is cardiac disease. The cirrhotic liver and the diseased kidneys also contribute their quota of symptoms, chronic uræmic manifestations being especially common.

The urine is in advanced cases invariably albuminous and invariably contains tube-casts.

Delafield and Prudden make reference to the occasional development, in serious arterio-sclerosis, of symptoms almost identical with those shown in cerebral hemorrhage. One such instance has fallen under notice here. A patient suffering from advanced arterial disease developed a progressive hemiplegia (becoming in its later stages bilateral), and the symptoms of extravasation were so well marked as to lead to diagnosis of hemorrhage into brain. The autopsy discovered no hemorrhage whatever, but a high grade of arterial disease in all arteries, with calcareous deposits and partial obliteration of many of the cerebral twigs.

Among the causes of arterio-sclerosis, poisons in the blood exerting a direct irritant action upon the vessel wall have long been accorded a prominent place. These poisons may be such as are introduced into the system from without, as alcohol, opium, and other habitually-used stimulants or narcotics, lead, etc., or may result from diathetic or acute or chronic infectious diseases, as syphilis, rheumatism, gout, or may be developed in the body, as in intestinal auto-infection or "uræmia" from defective excretion of waste products.

These last-mentioned states of auto-poisoning probably play a greater part in the causation of the arterial degenerative changes under consideration than has heretofore been recognized.

We are coming slowly to an adequate appreciation of the frequency of these states of auto-infection among the insane, and to recognize their important influence upon the functional activities of the brain and other organs. Attention has been several times directed to the common occurrence among insane people of nephritic disorders with their accompanying uræmic symptoms. If, as seems abundantly justifiable, we may assume that toxic-blood states favor the development of arterial sclerosis and degeneracy, we have in the frequently noted auto-infections among the insane a sufficient reason for the frequent occurrence of arterio-sclerosis among the same class.

The probable origin of these arterial degenerative diseases in chronic infection offers also reasonable explanation of the otherwise scarcely explicable although long-observed relationship between Bright's disease, heart-disease, and hepatic cirrhosis, and between these three and arterial degeneration.

The presence in the blood of substances which exert an irritant or injurious influence upon the vessel walls must produce a somewhat similar effect upon the cells of the brain, kidneys, liver, and other organs, and must result sooner or later in pathological changes readily recognizable upon examination, such as atheromatous and fibroid degenerations in the walls of the blood-vessels; degenerations or parenchymatous metamorphoses in the cells of the kidney, liver, etc., together with changes in connective-tissue elements (thickening and increase in); degenerative changes in the nerve-cells, with cerebral atrophy, as noted in terminal and senile dementia.

A given degree of toxæmia will act by no means uniformly throughout the animal organism, the points of greatest pathological activity depending probably upon inherent power of resistance of the different organs and tissues, which resistive power necessarily varies with the individual. In one having an unstable cerebral organization the cortical cell will suffer prominently, resulting in perversions of cerebral function, mental disorders, or in insanity, or permanent dementia if the toxic state be severe or long continued. In another the renal cells may be most affected, leading to sundry forms of nephritic disease; or the hepatic tissue may show greatest changes, as in the cases in which cirrhosis of the liver is prominent; or the blood-vessels themselves may be chiefly diseased. Usually the result in any case is a combination of the pathological effects above referred to. Whatever the initial toxæmia may be due to, in later stages there is added the poison of defective excretion whenever the kidneys become diseased, together with the ill effects of disordered heart action, of diminished arterial elasticity, of derangement of the nervous mechanism, etc. We find, in short, that those forms of Bright's disease in which there is endarteritis or arterio-capillary fibrosis of the renal vessels occur only in patients suffering from general arterial sclerosis; that atheromatous, chronic, sclerotic, and degenerative disease of the cardiac valves and endocardium is usually accompanied by similar changes, in a higher degree and more advanced stage, in the arteries; that in all cases of chronic Bright's disease which in their later stages become complicated by cardiac hypertrophy of valvular disease, widely distributed atheromatous or sclerotic arterial degeneracy is present.

It would seem, then, that the more constant and characteristic pathological condition in these cases is the arterial disease, a point which has been insisted upon by many who have studied the subject and apparently confirmed by our results here.

Bright's disease, then, does not cause disease of the heart, but the two, together with the cirrhotic changes in other internal organs and the degen-

erative changes in the arterial system, represent concurrent results of a common cause,—toxæmia.

What relation exists between sclerotic degenerative disease of the arteries and mental disorder? Probably an intimate one. No brain whose arteries are atheromatous is as well nourished, active, and fit for work as is the brain supplied by more normal vessels, a fact equally true of the sane and the insane. With sclerosis and atheroma we have the inevitable loss of elasticity in the cerebral arterial twigs, cardiac weakness or insufficiency, with general circulatory disorder; disease of the kidneys with its resultant auto-poisoning, as well as cirrhotic changes in the liver and other organs, and behind and above all the initial toxic state to which the complex of pathological changes is presumptively due. Under such unfavorable circumstances the cortical cell must necessarily suffer. That demonstrable changes in the nerve-cells of the brain do occur is shown by examination of the cortical tissue after staining by the Nissl method, and in preparations made by the Golgi silver process, and by Berkley's modification of the same. These cellular degenerative changes, as previously mentioned, are those already becoming familiar as the pathologico-anatomical basis of terminal dementia and of the senile insanities, and will not be entered upon in detail here, but may form a part of a subsequent report. In this connection some of Berkley's recently published work is interesting ("Lesions of Cortical Tissues caused by Acute Experimental Alcoholic Poisoning," *Journal of Nervous and Mental Diseases*, April, 1896) as showing "the large dependence of the lesions of the nerve elements upon the vascular," "all the alterations of importance being in the neighborhood of damaged vessels." What is true of acute alcoholic poisoning is probably true in at least a measurable degree of chronic poisoning from alcohol and other toxic agents. Regarded as a result of continued toxæmia, and a phase of the pathological anatomy of chronic poisoning not improbably occurring at an earlier date than the degenerations of the nerve-cells of the cortex, the subject of arterio-sclerosis assumes a renewed interest, and should be accorded an important place in the pathological anatomy of insanity.

Reviewing our two hundred cases, it is noticeable that the non-atheromatous insane suffer from acute forms of mental disorders; the atheromatous from chronic and incurable forms; when in the atheromatous, as sometimes occurs, there is an acute outbreak of mania or melancholia, the underlying mental dulling is generally noticeable. In short, the characteristic and ever present mental expression of arterio-sclerosis is *dementia* of some kind and degree.

REVIEW OF MEDICINE.

MEDICINE.

IN CHARGE OF JOHN H. MUSSER, M.D.,
Assistant Professor of Clinical Medicine in the University of Pennsylvania; Visiting Physician to the Presbyterian and Philadelphia Hospitals,

J. A. SCOTT, A.M., M.D., AND JOSEPH SAILER, M.D.,
Physician to the Out-Patient Department of the Pennsylvania Hospital, Associate in the Pepper Clinical Laboratory.

The Quantitative Determination of the Hydrochloric Acid in Human Gastric Juice. (*Deutsches Archiv für klinische Medicin*, Band lvi. p. 87, 1895.) By Hermann Strauss, M.D.

A very careful comparative study of the various methods in common use is made, and the following conclusions of their relative value are reached.

1. The reaction with dimethylamidoazobenzol is easily carried out, and has few complications.

2. The recognition of the dividing line is relatively difficult in the dimethylamidoazobenzol reaction on account of the gradual character of the change. It requires considerable practice, and the result is much affected by the personal equation of the investigator on account of the difference in the development of the color sense. The application of the method of titrating with an aqueous one per cent. solution of congo red does not give as gradual a boundary if the end of the reaction is considered to be the moment when the addition of a drop of gastric contents to the indicator does not cause an immediate blue-black discoloration at the line of contact of the two liquids.

3. A five-tenths per cent. alcoholic dimethylamidoazobenzol solution and a one-per-cent. aqueous solution of congo red are, in regard to their sensitiveness to free hydrochloric acid in human gastric juice, more delicate than Günzburg's reagent and congo paper. The solution of dimethylamidoazobenzol is, like the solution of congo red, more sensitive than paper that has been saturated with it.

4. Both indicators appear to act only upon uncombined hydrochloric acid.

5. Solutions of acid phosphates concentrated to five-tenths per cent. or more produce a change of color with dimethylamidoazobenzol solution, or one-per-cent. solution of congo red, that, although not identical with that

produced by minute quantities of free hydrochloric acid, is so similar as to be easily confused with it.

6. Organic acids, particularly lactic acid, have in concentrations, such as occur in pathological human gastric contents, the quality of giving a positive reaction with both indicators.

7. A one-per-cent. solution of congo red is more sensitive to all the substances that have been mentioned than the dimethylamidoazobenzol solution. It possesses all the advantages, but also all the disadvantages in still higher degree than the latter.

As congo paper is usually very slightly sensitive to organic acids in the degree of concentration in which they are usually found in the gastric juice, it is a very valuable reagent for merely qualitative work. In conclusion Strauss gives a few statistics concerning the relative frequency of persistent failure of free hydrochloric acid in the gastric contents after a test breakfast. In one hundred and seventy cases that he examined in Giessen, in none of which carcinoma was present, it was absent eight times, and in five also after a test meal. In one hundred and fifty-four non-carcinomatous cases, to whom the test meal had been given, it was absent twelve times. In Berlin, on the other hand, ninety-two cases were examined with the test breakfast, and twenty-five failed persistently to give the hydrochloric acid action. The average total acidity of the cases examined with the test breakfast in Giessen was forty-seven, and for the cases in Berlin, thirty-seven.

Vasomotor Œdema without Albuminuria. (*Revue de Médecine*, August 10, 1895.) By Professor B. Tchirkoff, of Kiew.

Six cases of this interesting condition were observed by the author between the years 1886 and 1894. The clinical history differs according as the subjects were anæmic or plethoric before the commencement of the disease: in the former case the œdema developed slowly; in the latter, very rapidly. Anasarca usually develops as the earliest symptom; then ascites supervenes, giving the picture of cirrhosis of the liver, later the other serous cavities become filled and serious pressure symptoms develop. Some of the invalids lose the hair from the face, the pubis, and the scalp. There is never the slightest trace of albumin in the urine, and the blood is normal in respect to the number of red cells and the proportion of hæmoglobin; nor was there in any case cardiac disease of such a nature as to account for the œdema. Usually, however, the blood contained a considerable proportion of reduced hæmoglobin, as if it were insufficiently oxidized in the lungs. After recovery the patients were invariably extremely weak and emaciated. One of the most interesting cases is that of a Jew, of forty-eight years, who had suffered from a slight gastritis. Two years after this attack, œdema developed in both feet. In the course of a few weeks the skin became everywhere œdematous, and there was a considerable collection of liquid in the peritoneal, pleural, and pericardial cavities. There

was no pulmonary œdema, and the urine and blood were both normal. Two cases of this character that had had syphilis had improved rapidly under iodide of potassium, and although there was no history of syphilis in the present case, the same drug was administered with prompt and permanent relief. Three years later the patient had a stroke of apoplexy, followed by left hemiplegia. A second patient presented almost identical symptoms, with, in addition, diminution of the red cells, leucocytosis, and an enormous quantity of reduced hæmoglobin in the blood. Potassium iodide was again rapidly effective. A third case was that of a physician suffering from syphilis of six years' duration; the symptoms resembled those of the other two patients, and were rapidly cured by mercurial inunctions. Tchirkoff formulates his conclusions as follows: 1. There exists a form of disease characterized by general œdema and effusion into the serous cavities; but in which the urine contains no albumin, and the heart, lungs, liver, and other organs present no modifications that could cause the œdema. 2. These œdemas are of vasomotor origin, and may be called "general vasomotor œdema." 3. They are often associated with dilatation of the right heart and moderate arterio-sclerosis. 4. They are always accompanied by modifications of the blood,—that is to say, the blood is reduced, but in addition to this trophic phenomena and pronounced paralysis of the cutaneous veins are often observed. 5. In the majority of cases the œdema is of syphilitic origin, and yields to mercury or the iodides.

Contribution to the Study of Endocardial Efflorescences in Tubercular Patients. (*Centralblatt für Allgemeine Pathologie und pathologische Anatomie*, February 23, 1895.) By Dr. Biondi, of Florence.

It has lately been maintained that a genuine tubercular endocarditis exists. To reach some definite conclusion upon this subject, Biondi studied a number of endocardial efflorescences that occurred in tubercular patients. In all cases the endocardium appeared to be normal, and the nuclei of the endothelial cells stained well; and neither hyaline necrosis nor small-cell infiltration was ever found. The vegetations were variously formed, sometimes they consisted of a homogeneous or slightly granular mass, through which fibrous strands passed in various directions, and occasionally between these trabeculæ or in the substance of the mass itself, small cavities were found filled with white and red corpuscles. In other cases groups of larger cells were found at the base of the vegetations (fibroblasts), but there was never even a distant resemblance to the structure of a tubercle. Tubercle bacilli were never found, and other microbes in only three instances, these being always cocci and lodged in the periphery of the vegetations. The author concludes that in these cases it would be improper to speak of a tubercular endocarditis, or even of a microbic endocarditis following secondary infection from a cavity or the intestinal tract; nor, since the endocardium beneath the vegetations was normal, can one speak of a healed secondary endocarditis. He therefore decides that the vegetations are identical with

the endocardial efflorescences described by Ziegler, which are really due to an alteration of the endocardium with the formation of hyaline thrombi and the deposit of fibrin. The slight alteration of the endocardium that is required to cause these growths can easily occur in exhausting diseases, such as the cachexias of tuberculosis or malignant tumors, and as a result marantic thrombi occur. To the nine cases of tuberculosis, Biondi adds two of carcinoma cachexia in which he found the same alterations. As a result of his work, he believes that true tuberculous endocarditis, if it ever occur, must be uncommon, since in none of nine cases did he find any indication of it; and further, that lesions of marantic origin in tuberculosis have been neglected.

Endocarditis and Pyæmia produced by the Bacterium Coli Communis. (*Wiener klinische Wochenschrift*, April 30, 1896, No. 18.) By Fritz Hitschmann, M.D., and Edward Michel, M.D., of Vienna.

The patient had suffered for a year from weakness and shortness of breath. Micturition had been difficult since an attack of gonorrhœa in early life. Examination revealed an aortic insufficiency, atheroma of the vessels, and a condition diagnosed as incipient tabes. On account of the urethral stricture he was transferred to the venereal department, where, after a difficult catheterization, he had a chill followed by high fever. A bacteriolgical examination of the blood made at this time was negative. Six days later a second chill occurred, followed by marked leucocytosis. The patient became jaundiced, ecchymosis appeared upon the skin, and death occurred finally from the septico-pyæmia. The pathological diagnosis was as follows: Ulcerative endocarditis of the aortic valves, verrucose endocarditis of the mitral and tricuspid valves. Rupture of the aorta with the formation of a false aneurism. Pyæmic infarcts of the lung, spleen, and kidneys. False passage in the urethra. Bacteriological examination of the endocardium, the infarcts, and the cutaneous hemorrhages showed the presence of the bacterium coli communis exclusively. Histological examination of the tissues revealed the presence of bacteria in every respect similar to these. In the tissue of the urethra three forms of bacteria were found,—cocci, short bacilli with rounded ends, and long, slender bacilli forming threads. Cultures were not made from the urethra. The authors believe that three possibilities exist: 1, that the bacillus coli communis infected the wounded urethra from the first, and thence entered the circulation; 2, that the primary urethral infection was due to the cocci, and that the bacterium coli communis infected it later, but that the latter alone entered the circulation; 3, that the streptococci first produced the general infection, and that the bacterium coli communis entered the circulation later. From a consideration of the various features of the case, they consider that the first theory is probably the true explanation. The infection of the urethra by the bacterium coli communis is easily explained by supposing that the instruments were either unclean or that the organism

was present in the urethra before the injury. As, after a careful search of the literature, Herren Hitschmann and Michel have been unable to find any other case of endocarditis in which the cause is clearly proved to be the bacterium coli, they claim the credit of having reported the first case.

A Case of Acute Strumitis caused by the Diplococcus of Fränkel-Weichselbaum, with Secondary Metastatic Pneumonia. (*Münchener medicinische Wochenschrift*, May 26, 1896.) By Dr. Heddæus, of Heidelberg.

The patient had had an enlargement of the thyroid gland for two years, which gradually produced dyspnœa by pressure upon the trachea. Eight days before admission an exploratory puncture had been made, afterwards the dyspnœa rapidly increased, the gland became tender, and fever developed. Upon admission there were extreme dyspnœa, aphonia, a stenotic bruit in the trachea, and the tumor presented marked fluctuation. The following day the cyst was enucleated and found to contain a thin hemorrhagic liquid with infiltrated walls. Cultures made from the liquid were found to consist exclusively of typical Fränkel-Weichselbaum bacilli. On the third day after the operation the physical signs of pneumonia were found in the right middle lobe and the sputum was found to contain an enormous number of typical Fränkel-Weichselbaum bacilli. The wound healed rapidly and the pneumonia underwent the crisis at the fifth day. Subsequently aphonia again developed, probably due to the retraction of the scar.

Heddæus discusses whether the infection was caused by the instrument used in making the exploratory puncture or whether it merely acted as a predisposing agent by injuring the tissue of the gland, the infectious element entering by some other channel. Accepting the latter view, it becomes interesting to consider how the bacilli had entered the system. It is unlikely that the point of entrance was the mouth, for it has never been demonstrated that infection takes place from this locality; nor can the lungs be considered as the source of infection, as the pneumonia was manifestly secondary to the strumitis, and probably embolic. It must, therefore, be accepted, although not proved, that the original inoculation occurred from the unclean instrument used in making the puncture.

Investigation of the Tissue Metamorphosis in Acute Yellow Atrophy of the Liver. (*Berliner klinische Wochenschrift*, May 25, 1896.) By Paul Friedrich Richter, M.D.

The first patient was a woman of twenty-eight years of age, with a recently acquired hard chancre. Three weeks after infection icterus appeared, soon the liver began to lose in volume and become tender, and fourteen days later death occurred. The autopsy confirmed the diagnosis of acute yellow atrophy. During the two weeks preceding death, daily examinations had been made of the urine to determine the amount of urea, ammonia, the

alloxan bodies, and uric acid that was excreted. The results are given in the nitrogen equivalents of these substances. The total quantity of nitrogen was normal excepting upon the thirteenth and fourteenth days. The urea was also diminished upon the last two days. As the coma commenced upon the tenth day, it cannot have been due to a uræmic condition. The actual course of affairs was probably as follows: The liver acts as a barrier to protect the organism from the toxic products of tissue metamorphosis. The first effect of its exclusion, therefore, is an intoxication of which the cause is unknown. As a result of this intoxication a state of coma develops and the secretion of urea is affected secondarily to this. The quantity of ammonia in the urine was slightly increased. This frequently occurs in fevers and other conditions where there is an undue production of acid, and that this undue production occurred in the present case was shown by the diminished alkalinity of the blood, which equalled only two hundred and twelve milligrammes of sodium hydrate titrated according to the method of Löwy. The excretion of uric acid and the so-called alloxan bodies was usually considerably increased, in accordance with the results of experiments upon animals. The cause of this may be sought in the necrosis of the nuclei of the cells of the hepatic parenchyma and the uric acid formed from the nuclein set free in this manner. It is unlikely, however, that this alone accounts for the formation of urea, as Horbaczewski maintains; particularly as, in this case, the quantity was very irregular, and by no means greatest on those days when the physical signs indicated that the degeneration of the liver was most rapid. In the latter days of the disease, when the nourishment was purely milk, the total amount of nitrogen ingested equalled on the average about 3.5 grammes *per diem*, and the total amount of nitrogen excreted equalled about ten grammes *per diem*, showing the great destruction of tissue in the organism.

The second patient was a woman of twenty-two years, with syphilis of six months' standing. Gastric disturbances lasted thirty-six days, then icterus appeared, and thirteen days later the liver was found to be tender and smaller. Six days later coma developed, and in three days death. Tyrosin could be recognized in the urine, even on the last day, contrary to the results of the first case, where neither tyrosin nor leucin could be demonstrated. The autopsy confirmed the diagnosis of acute yellow atrophy, and the microscopical examination showed complete atrophy of the parenchyma of the liver. The urine was examined from the time when the diagnosis was first made nine days before death, for five days, and the results confirmed in every respect the results obtained in the previous case. Richter concludes, in contradiction to Münzer, von Noorden, Weinhand, and others, that other organs than the liver take part in the formation of urea, and in case of destruction of the hepatic tissue they may vicariously supply its place almost completely.

Hemorrhages: Their Relation to Barometric Pressure. (*British Medical Journal*, May 30, 1896.) By Thomal Whitelaw, M.D., of Edinburgh.

The author reports fifteen cases in which hemorrhage occurred, either for the first time or after an interval, at a period when the barometric pressure was unusually high. Earlier notes of cases, that were unfortunately lost, confirmed the conclusion that "there is a marked affinity between a high barometer and hemorrhages of various kinds."

A Case of Lymphangiectasia and Lymphorrhagia: Contribution to the Casuistic of Lymphangiectasia. (*Deutsches Archiv für klinische Medicin*, vol. lvi. p. 402, March 26, 1896.) By J. Haferkorn, M.D., of Dresden.

The patient was a girl of eleven years without hereditary taint. At the age of seven years, after an attack of scarlatinal diphtheria, the parents noticed that the right leg was larger than the left. Later a white discharge occurred from the vagina, amounting at times to a half litre. Otherwise the child was perfectly normal, and the lymph-glands were not enlarged. The right labium majus was much swollen and covered lines of nodulated blisters of yellowish-white translucency, the largest being about the size of a pea. A few small blisters were also found upon the left labium and upon the clitoris, but the hymen and nymphæ were free. The internal sexual organs presented no anomaly. The blood and urine were normal, and repeated examination failed to detect filaria embryos. The skin and subcutaneous connective tissue of the right leg were much thickened and felt as if there were bands of dense connective tissue beneath the surface. There was no œdema nor dilatation of the cutaneous veins. The left leg was normal. One of the larger blisters was opened and in the course of ten hours it gave forth about three hundred cubic centimetres of a milky liquid that resembled lymph or chyle, containing fat, sugar, and red and white blood cells, and coagulating upon boiling. Exercise increased the swelling, rest diminished it markedly. Treatment was without effect. The case belongs to those that have been described under the names of lymphangiectasia or elephantiasis lymphangiectatica; and the blisters represent the dilated lymph-vessels of the papillæ of the skin, and are lined with endothelium. The presence of chyle in these dilated vessels can be explained by the connection that exists between the lymph-channels of the pelvis with the receptaculum chyli. Haferkorn now tabulates forty-seven cases, from a study of which he draws the following conclusions. The disease appears most frequently in the young, and indifferently in either sex. The earliest symptoms are the exudation from the external genitalia or the skin of the thigh of a clear or milky liquid, and a gradual or sudden enlargement of the lower limbs or external genitalia, the latter being sometimes accompanied with symptoms of inflammation. This exudate usually flows from minute blister-like elevations of the skin. The skin feels firmer and slightly elastic,

and usually the right side is alone involved. There is no sharp boundary between simple lymphangiectasia and lymphangiectatic elephantiasis. The general health of the patient is very rarely affected, the course of the disease is almost invariably chronic, and the only serious complication is occasional peritonitis. The causes of the condition are: 1, occlusion of the lymph-channels; 2, local disturbances of the tissues, general disturbances having only a predisposing influence. Haferkorn himself believes that the most important cause is congenital dilatation of the lymph-spaces, especially as Bayer has shown that the anastomoses of the lymph-channels are very free, and therefore that any obstruction must be very extensive. In support of this view he urges the commencement of the disease in youth, and the fact that the tissues most affected are those which from their delicate nature would be most likely to be the seat of this change, such as the scrotum, labia, and the skin of the inner side of the thigh. In conclusion, he draws attention to the similarity of his case to the cases of colpohyperplasia cystica, and makes a final definite diagnosis of lymphangiectasia of the vagina and possibly of the bladder and rectum.

SURGERY.

IN CHARGE OF HENRY R. WHARTON, M.D.,

Demonstrator of Surgery and Lecturer on Surgical Diseases of Children in the University of Pennsylvania; Surgeon to the Presbyterian Hospital, the Methodist Episcopal Hospital, and the Children's Hospital; Consulting Surgeon to the Presbyterian Orphanage,

JOSEPH P. TUNIS, A.B., M.D., Assistant Demonstrator of Surgery in the University of Pennsylvania, AND J. P. ARNOLD, M.D., Medical Superintendent of the Presbyterian Hospital.

Diagnosis of Carcinoma of the Breast in its Early Stages. (*British Medical Journal*, May 30, 1896.) By A. Marmaduke Shield, M.D.

In a clinical lecture at St. George's Hospital, the author goes over this subject very carefully and clearly. The question involved in the accurate diagnosis of this condition is such an important one that a careful study of the symptoms as observed in the large experience of Shield is valuable.

He states that out of seven hundred and fifty cases of breast-diseases of all kinds at St. George's Hospital, between the years 1875 and 1895, three hundred and fifty-three or about one-half were carcinomatous.

In making the examination he advises that the thorax be completely undressed. The examination should be made with the flat of the fingers, and not by roughly pinching up a portion of the gland. The following points are to be noted. 1. The age: the most likely age is between forty and fifty-five. 2. The character of the pain, which is neuralgic, not throbbing, and is not accompanied by heat or redness. 3. The onset is insidious. 4. The contour is rarely globular, usually it is obtuse or irregular. 5. The

hardness is stony, and is one of the most striking and reliable characteristics of scirrhus. 6. The growth does not move *in* the breast substance, but moves *with* it. 7. Retraction of the nipple is an important symptom, but it may be absent. 8. The dimpling of and the pig-skin-like condition of the skin are of the utmost value. 9. The presence of enlarged glands is important, but their absence is not proof that the disease is innocent. In cases of doubt the author is strongly in favor of exploratory incision. He believes that there are peculiarities of structure or of growth in certain individuals which may be sufficiently pronounced to become hereditary, and thus a predisposition to carcinoma may be found in some families. He calls attention to the fact that certain obscure conditions coming on in elderly women, such as an insidious pleurisy, hydrothorax, supposed "rheumatic" pains about the thorax or bones, or, of still greater importance, spontaneous fracture, or severe pains in the spine terminating in paraplegia, may be due to cancer, and that in all such cases the breast should be carefully examined, as the discovery of a scirrhus nodule may explain a very mysterious illness.

He insists upon a careful examination of the breast, lungs, and abdomen, especially of the liver, for secondary growths, as having important bearings on the question of operation.

A New Method of Operating for Hydrocele. (*Lancet*, June 13, 1896.) By Surgeon-Lieutenant-Colonel E. Lawrie, M.B. (Edin.), Residency Surgeon, Hyderabad, Deccan.

The operation for the radical cure of hydrocele should be performed in the following manner: The sac is punctured in the usual way, and when about a third or one-half of the fluid has been withdrawn, two drachms of a saturated solution of bichloride of mercury in glycerin are injected and mixed with that which remains, and allowed to rest in the sac for from half a minute to a minute. The whole of the fluid is then drawn off to the last drop. Very little pain is experienced, and unless the patient is nervous and takes an anæsthetic he is able to move about immediately after the operation. For the next few days he must, as a rule, lie about, but need not in any case be confined to bed, and in a week or less he is quite well. Provided the surgeon is careful that his hands and instruments are clean and free from micrococci when the puncture and injection are made, they produce a uniform result,—*i.e.*, sufficient aseptic inflammation to obliterate the sac and nothing more.

NEUROLOGY.

IN CHARGE OF LANDON CARTER GRAY, M.D., New York City, GUY HINSDALE, M.D., Philadelphia,
WILLIAM BROADDUS PRITCHARD, M.D., New York City, AND WM. G. SPILLER, M.D., Philadelphia.

Acute Inflammatory Forms of Bulbar Paralysis. (Verein für Psychiatrie und Neurologie in Wien, *Wiener klinische Wochenschrift*, April 9, 1896.) By H. Schlesinger, M.D.

Dr. Schlesinger reported the case of a woman who, on waking one morning, found that she spoke peculiarly and that fluids regurgitated through the nose in swallowing; the evening previous she had had no symptoms. Syphilis was denied. The same day chills and vomiting occurred; high fever lasted three days. The patient suffered from vertigo, and during eight days from an irresistible desire to sleep. Some months later weakness and uncertainty of movement were noticed in the right arm, and after a time she was scarcely able to walk. Temporary diplopia and vesical trouble had also been noted. The patient became very excitable, had headache, globus hystericus, and nystagmus-like movements on looking to one side, bilateral paralysis of the soft palate, nasal speech, loss of the pharyngeal reflex, moderate degree of salivation, increased frequency of the pulse-beat and of respiration, paresis of the sensory branches of the right fifth, impairment of the senses of smell and taste on the right side, limitation of the fields of vision, light paresis of the right arm and of both lower extremities without atrophy, increased tendon reflexes, foot clonus, moderate diminution of sensibility in all its forms on the right side of the body and lower half of left leg and spastic-paretic gait. The vocal cords functionated in respiration and phonation.

Dr. Schlesinger expressed the opinion that the different forms of acute inflammation in the central nervous system cannot be clearly separated, and that the different symptoms are often merely due to difference of location. He considered the above case as possibly disseminated sclerosis with hysteria. This may begin in acute inflammatory affections of the nervous system (Oppenheim), although rarely with bulbar symptoms. It may have been originally disseminated myelitis, from which disseminated sclerosis is known to develop (Oppenheim).

Acute Hemiatrophy of the Tongue. (Verein für Psychiatrie und Neurologie in Wien, *Wiener klinische Wochenschrift*, April 9, 1896.) By Dr. Karplus.

Dr. Karplus presented a case of acute hemiatrophy of the tongue. Certain indications of hereditary syphilis were present. The patient had suffered for three nights from severe headache and pain behind the left ear, which gave place to temporary disturbance of speech, difficulty in mastica-

tion, and permanent paræsthesia on the left side of the tongue. The tongue deviated to the left in extension, and presented atrophy, fibrillary contractions, and partial reaction of degeneration. All other cerebral nerves were normal. Taste and objective sensation in the tongue were not affected. The cause may have been compression of the hypoglossal nerve in the anterior condyloid foramen from syphilitic swelling of the periosteum.

A Case of Progressive Muscular Dystrophy considerably improved by Methodic Gymnastics. (*Neurologisches Contralblatt*, May 1, 1896.) By A. Wiener, M.D. (clinic of Professor B. Sachs).

The patient had been under observation for two years. The diagnosis of the Landouzy-Dejerine type of muscular dystrophy was made on account of the extensive atrophy involving the muscles of the face and shoulders, as well as those of the back and legs; on account of the absence of fibrillary contractions; of the slight changes in the electrical reactions; of the absence of sensory disturbances, and especially on account of the progressive character of the atrophy during several years.

Electricity failed to benefit the patient. Within two months after systematic gymnastics had been employed, marked improvement was noticed, which continued under this treatment. As the muscles of the face were not exercised to any extent, the atrophy in these remained unchanged.

A Case of Ménière's Disease in Leukæmia. (*Berliner klinische Wochenschrift*, April 23, 1896.) By F. Alt, M.D., and F. Pineles, M.D.

After having complained of headache and weakness for several months, the patient was seized with an attack of violent vertigo and tinnitus aurium. Upon recovering consciousness he found that his hearing was very defective; fourteen days later deafness was complete. He now had repeated attacks of vertigo and was confined to his bed. A severe form of leukæmia myelolienalis chronica was diagnosed (2,600,000 red blood-corpuscles to 600,050 white blood-corpuscles, or about 1 : 4, numerous large mononucleated leucocytes, myelocytes, lymphocytes, scattered nucleated red blood-corpuscles, very large spleen and liver).

The microscopic examination revealed in the intramedullary portion of the cochlear and vestibular nerves numerous foci of small-cell infiltration, especially noticeable at the point of junction of the two nerves. The pia was moderately thickened and infiltrated. A moderate degeneration could be seen in the acoustic fibres. The middle ear and labyrinth were apparently normal, although it is possible that some changes in the inner ear may have escaped detection on account of the process of decalcification.

A Case of Retrograde Degeneration of the Pyramidal Fibres in the Anterior and Lateral Columns. (*Archives de Physiologie*, No. 1, January, 1896.) By Professor Dejerine and Dr. Sottas.

The patient had had spinal syphilis for thirty-two years. At the autopsy the brain was found normal, and by the microscopic examination

the ordinary lesions of syphilitic meningo-myelitis were observed. At one period in the early history of the disease it is stated that an attack of weakness of the lower limbs with retention of urine followed by incontinence developed abruptly. [The authors have elsewhere expressed their belief in the frequency of these sudden attacks of paralysis in spinal syphilis.]

The interest of the case centres in the retrograde degeneration of both direct and of both crossed pyramidal tracts. Some have considered this as a propagation of inflammation from the pia, others have explained it as an ascending myelitis. Drs. Dejerine and Sottas cannot accept the explanations above offered; they state that it only appears in cases of long duration, and involves especially the pyramidal fibres, decreasing in intensity in ascending. They consider it a cellulipetal degeneration of the motor tracts including the Wallerian degeneration of a certain number of column-fibres.

The Nerves of Taste. (Vienna Physiological Club, *Wiener klinische Wochenschrift*, May 7, 1896.) By L. von Frankl-Hochwart, M.D.

The lingual nerve supplies fibres for the sense of taste to the anterior two-thirds of the tongue; these pass entirely or for the greater part into the chorda tympani. Clinical observation of processes situated at the base of the brain proves that these fibres enter the fifth nerve; resection of the Gasserian ganglion very often causes ageusia in the anterior portion of the tongue. It is not known whether these fibres of taste are to be found in the second or third branch of the fifth nerve, and the mode of connection with the facial and chorda tympani is unknown. The glossopharyngeus is generally recognized as the nerve of taste to the posterior third of the tongue. In some individuals, however, total destruction of the trigeminal nerve by basal growths, trauma, or resection, does not interfere with the sense of taste, and probably the glossopharyngeus supplies in these cases the entire tongue with taste fibres. Although repeated clinical observation of cases in which the ninth nerve was destroyed has shown alteration of taste only at the posterior part of the tongue, Popl, in his case of compression of the left glossopharyngeus by an aneurism, as demonstrated by the autopsy, without involvement of the fifth, was able to observe considerable disturbance of taste in the anterior part of the tongue as well as total ageusia over the left posterior portion.

Aneurism of the Left Internal Carotid (or of a Branch on the Left Side from the Circle of Willis). (Berlin Medical Society, *Berliner klinische Wochenschrift*, May 4, 1896.) By Professor H. Oppenheim.

Professor Oppenheim presented a patient who had complained for fifteen years of headache, most severe over the left eye, nausea, and vomiting. In 1884 homonymous hemianopsia bilateralis dextra was noticed, and in 1888 optic neuritis. On account of the long duration an exostosis or cholesteatoma or psammoma, etc., was thought of, but an aneurism of one of the

basal arteries seemed most probable. On auscultating above the left ear a loud rhythmical murmur isochronous with the pulse was heard. With the exception of a slight paresis of the right facial, no other cranial nerves were involved. At one time the patient was said to have had diplopia. A very slight hemiparesis was present. Compression of the carotid caused no difference in the murmur.

Analgesia of the Ulnar (Biernacki) and of the Peroneal Nerve as a Sign of Tabes. (*Neurologisches Centralblatt*, April 15, 1896.) By Arthur Sarbó, M.D.

Anæsthesia of the ulnar nerve on pressure in the sulcus ulnaris was mentioned as a sign of tabes by Biernacki in 1894. It was found frequently in general paralysis (Cramer), more especially in males (Göbel), and to some extent in other mental diseases. Sarbó has found that in normal persons, or those afflicted with such nervous diseases as hemiplegia, disseminated sclerosis, lateral sclerosis, syringomyelia, hysteria, etc., pressure over the ulnar or peroneal nerve behind the head of the fibula always causes a sensation of pain. He examined fifteen cases of tabes, and observed that six of these presented bilateral ulnar and peroneal analgesia; in eleven he found bilateral analgesia of the ulnar; in six, bilateral analgesia of the peroneal nerve, and in five cases unilateral analgesia,—thus making eleven cases with involvement of the peroneal. In only one of these fifteen patients were the ulnar and peroneal nerves normal. In males the sign was more evident. These investigations were made in the presence of others, and repeated after several weeks with the same results.

A Case of Right-Sided Paralysis of the Hypoglossus. (*Neurologisches Centralblatt*, April 15, 1896.) By A. Marina, M.D.

The author describes a case of right-sided paralysis of the tongue with hemiatrophy, reaction of degeneration, contracture, and bilateral fibrillary contractions. Sensation and taste were normal. The soft palate was thinner on the same side. A pharyngeal affection had occurred before the beginning of the paralysis, and the cause of the latter may thus have been an infectious neuritis. Contracture has not previously been recorded in peripheral glossoplegia.

Muscular Flaccidity (Hypotonia) in Tabes Dorsalis. (*Neurologisches Centralblatt*, April 15, 1896.) By Dr. Fränkel.

If the lower limb of a tabetic patient is flexed, without bending it at the knee, it can be carried farther forward without pain than in a healthy person. This is due to the great flaccidity of the muscles in tabes. The writer observed the same condition in a case of infantile spinal paralysis with atrophy of the thigh, but the movement was passive. In tabes the patient himself can overflex his thigh.

This peculiarity was also noticed in the cadaver before rigor mortis set

in, and dissection showed that the muscles had not been torn. The hypotonia is not limited to the flexor muscles of the thigh; it is seen also in the gait. This abnormal degree of voluntary flexion, with preservation of the motor power and muscular volume, could be found in no other disease of the nervous system, and Fränkel considers it pathognomonic of tabes. In severe forms of tabes it never fails. A constant relation between ataxia and hypotonia does not seem to exist. Ataxia is a symptom-complex made of elements of different significance.

PATHOLOGY.

IN CHARGE OF ALLEN J. SMITH, A.M., M.D.,
Professor of Pathology in the Medical Department of the University of Texas, Galveston, Texas,
AND
HENRY W. CATTELL, A.M., M.D.,
Demonstrator of Morbid Anatomy in the University of Pennsylvania; Prosector to the American Anthropometric Society; and Pathologist to the Presbyterian Hospital, the Institution for Feeble-Minded Children at Elwyn, etc.

A Case of Indigenous Parasitic Chyluria with Filaria Nocturna in the Blood. (*Medical News*, May 2, 1896.) By Frederick P. Henry, M.D.

The writer considers the following case of chyluria as of special interest, both because it is the first of the kind observed in Philadelphia, and also for the reason that it adds another to the list of those indigenous to the United States.

Fanny B., aged twenty-nine, was born in Columbia, South Carolina, where she lived until she was twenty-seven years of age. She then spent one year in Palatka, Florida, and came to Philadelphia in March, 1895.

At the age of twelve, after a fall from a tree, an abscess developed in the left lumbar region and remained open for several months. A year after its closure another appeared in the left iliac region which also pursued a chronic course. These abscesses may have been due to filariæ, as they form part of the clinical history of filariasis.

The patient had two miscarriages, one at four months and a half and the other at two months, which were ascribed to persistent vomiting. She gave birth to a child at term three weeks before her admission to the Woman's Hospital of Philadelphia, on February 16, 1896. The labor was normal, but she suffered previously with pain in the region of the kidneys which returned on the second day of her lying-in, and continued for a week, when it abated somewhat. This was followed by difficulty in micturition from occlusion of the urethra by coagula of lymph and blood, and the urine became milky and separated on standing into two portions, the lower being hemorrhagic and the upper having the appearance of milk or cream. This chylous urine contained fat and a trace of albumin, but no sugar nor casts.

A microscopical examination of the blood drawn from the finger was made at 10 P.M., on February 19, and filariæ were found in almost every slide. Subsequent observations showed that the parasites were very few in number or absent from the blood during the day; they were, therefore, the variety known as the *filaria nocturna*.

The patient was put to bed and treated first with quinine and ergotin, but without any apparent effect. On February 28 she was placed upon thymol (two grains every three hours). The urine then became normal in every respect, and remained so for seven days, when it again became chylous and bloody. The filariæ during this interval were present in the blood. On March 12 methylene blue in two-grain capsules every three hours was ordered, the writer being induced to do so by the statements of Dr. Austin Flint, concerning the efficacy of this substance in a case of parasitic chyluria. After being taken continuously for seventy-two hours the blood was found to contain actively-moving unstained filariæ. The urine and fæces were stained a deep blue, the milk was uncolored. After being taken for nine days the drug proved absolutely inert so far as any influence on the vitality of the embryos is concerned, and it does not stain them until they are dead.

The patient was vaccinated in accordance with the theory that an intercurrent affection might destroy the parasite, but although successful it was quite useless from a therapeutic stand-point.

In regard to treatment the writer does not believe that there is a drug capable of destroying adult filariæ in the human system.

Leeches were applied to the patient to find whether they play the *rôle* of intermediate host to the filariæ. The parasites lived many hours in the body of the leech, but finally died.

The writer questions whether filariasis may not become endemic in Philadelphia by the importation of a case into the city. Dr. Patrick Manson has established the fact that the mosquito acts as an intermediary host in conveying the *filaria nocturna* from man to man. Mosquitoes are very abundant in Philadelphia, and have access to its water-supply, the Schuylkill River. The only protection from this and other sources of infection is filtration.

Primary Splenomegaly,—Primary Carcinoma of the Spleen. (*Archives de Médecine experimentale et d'Anatomie pathologique*, March, 1896.) By Drs. Picon and Ramond.

The authors record a case of this condition which had previously been described by Gaucher in 1882. The disease has a definite clinical type, regular and uniform increase in the size of the spleen and of the liver without any ascites. Pain increasing with the progress of the disease. Interference with digestion, defecation, and micturition from pressure exerted by the spleen, epistaxis and general hemorrhages, spongy gums, icterus, diarrhœa, no glandular enlargement, oligocythæmia without leuco-

cytosis. The disease lasts for a long time, and death is usually due to some complication. The spleen retains its ordinary form, but is much heavier than normal; its tissue is sclerosed and infarcts are present. The liver shows diffuse interstitial cirrhosis, peri- and intralobular. Microscopically the spleen is occupied by alveoli of fibrous tissue containing large epithelial-looking cells, polyhedral, measuring 16 by 36 microns, with nuclei 4 by 8 microns. These cells may be separated by hemorrhages. The Malpighian bodies are destroyed by the growth, and the vessels narrowed and sclerosed.

The case they record was a woman, aged thirty-two years, who had never had ague, but since a blow on the abdomen four years before had suffered from abdominal pain. Her gums became painful, and her legs œdematous. She was very anæmic from menorrhagia, and of an icteric tint. There was a large abdominal tumor, which was thought to be a uterine myoma. Laparotomy was performed, and the tumor, which was then for the first time recognized as the spleen, was removed successfully. The liver at the time of the operation appeared normal, but subsequently became enlarged. The blood was not examined before the operation, but after it only showed a moderate degree of traumatic anæmia. Cultures from the spleen were negative. It weighed two thousand eight hundred grammes, and histologically presented most of the appearances described by Gaucher, but showed certain differences; thus, the alveolar walls contained pigment, some of the epithelial cells had undergone pigmentary degeneration, giant-cells were present, the Malpighian bodies were preserved, and the lymphatic glands in the hilum of the organ were involved in a similar manner, and probably secondarily to the spleen. The nature of the change in the spleen is discussed at some length. Gaucher regarded his case as carcinoma, but Cornil did not admit the possibility of primary carcinoma of the spleen, and regarded the changes merely as those of hyperplasia.

The authors did not consider it to be an endothelioma, because, except for some sclerosis, the vessels showed no change. They came to the conclusion that it was a primary carcinoma of the spleen, giving rise to secondary growths in the adjacent lymphatic glands, and believed that it arose in some fragments of the pancreas which in fœtal life had been included in the substance of the spleen. Such an inclusion they found in a three months' fœtus, and identified as of this nature the cells described by Peremeschko in the spleens of fœtuses, young children, and suckling women.

In discussing this paper the abstracter, Rolleston, says that the description of the clinical history and morbid anatomy does not convey the impression that the disease is carcinoma, or, indeed, any new growth in the ordinary sense of the term. As it is a very rare condition, attention may be drawn to "a case of enlarged spleen in a child, aged six years," brought before the Pathological Society of London (*Trans. Path. Soc.*, vol. xlvi. p. 148) by Dr. W. Collier, which is almost identical with that of Picon and

Ramond. The microscopic appearances were so remarkable that it was referred to the Morbid Growths Committee. Their report, however, is somewhat indefinite. They do not regard the condition as sarcomatous or lymphadenomatous, and consider the large number of endothelial-like cells as similar to that "not uncommon in lymphatic glands." This appearance is probably the large-celled hyperplasia figured by Ziegler (Macalister's translation, Part II., s. 3, p. 112, 1884), and which is also met with sometimes in tuberculosis of lymphatic glands.—*Medical Chronicle*, June, 1896.

FORENSIC MEDICINE.

IN CHARGE OF LORENZO D. BULETTE,
Of the Philadelphia Bar.

LEGAL RESPONSIBILITY OF A PHYSICIAN FOR THE NEGLIGENCE OF HIS PROFESSIONAL SUBSTITUTE.

It is customary for the physician, when temporarily absent from his practice, to intrust it to another physician; and, in the recent case of Blank *vs.* Hathorn,[1] which arose in New Jersey, the duties and liabilities of the principal and his professional substitute were ascertained and defined.

The action was brought on the theory that the substitute was the agent of the absent physician, who, as a consequence, is liable for the results of the negligence or unskilfulness of such substitute. The trial court adopted this view; but the Court of Appeals, to which the case was carried by the absent physician against whom a verdict was obtained, declared this to be error, holding that each physician was engaged in a distinct and independent occupation of his own, having no business connection with the other except such as might incidentally arise from the one attending the patient of the other while he was temporarily absent; and that in such case the regular physician is not liable for the want of skill in his professional substitute.

The principal facts which were proved at the trial of the cause are as follows: The defendant, a practising physician of the city of M., promised the plaintiff, who resided in that city, to attend his wife professionally during her confinement. A short time before that event took place he left the city for a three days' vacation; having first visited the wife of the plaintiff, and made an examination of her condition, from which he concluded, as he informed her, that his services would not be needed for a few days. Before his return, however, she was confined. The plaintiff, when his wife's travail came on, telephoned to the house of the defendant for him

[1] 33 Atl. Rep. 389.

to come at once; and in response to this message one Doctor P. arrived, stating that Doctor B. was out of town, and he represented him, and proceeded to take charge of the case, and to deliver the plaintiff's wife of her child, without any objection being made. It was not suggested that his treatment of the wife was unskilful, but evidence was offered to show that after the birth of the child he improperly severed the umbilical cord so close to its body that it was impossible afterwards to tie it, and that the child consequently died, in a short time, of umbilical hemorrhage. The shock caused by the child's death under these circumstances, it was testified, so affected the mother as to seriously injure her health, and render her an invalid for many months, thereby depriving the plaintiff of her services and companionship, and making it necessary for him to incur expenses which he would not otherwise have been called upon to meet; and this suit was brought to recover compensation for such loss of services and companionship, and for such expenses, on the theory that Doctor P. was the agent and representative in this matter of the defendant, and that, therefore, he was legally liable for these results of Doctor P.'s unskilfulness. The trial judge adopted this theory, advanced on behalf of the plaintiff, in his charge to the jury, and so instructed them. "In this," says the Supreme Court, in an opinion by Gummere, J., "there was an error. Doctor P. and the defendant were each of them practising physicians of this State, having no business connection with one another, except that Doctor P. was attending the patient of the latter while he was temporarily absent. Even if it be admitted, therefore, that Doctor P. was employed by the defendant to attend upon the wife of the plaintiff, that fact did not render the defendant liable for his neglect or want of skill in the performance of this service, for an examination of the authorities will show that a party employing a person who follows a distinct and independent occupation of his own is not responsible for the negligence or improper acts of the other.

"But," continues the judge, "even if I had reached the conclusion that Doctor P. was the agent of the defendant, in his attendance upon the wife of the plaintiff, I should nevertheless consider that there could be no recovery in this case for the losses sustained by the plaintiff. He does not complain that his wife was unskilfully treated by Doctor P., and that he thereby lost her services and companionship, and incurred expenses on that account to which he would not otherwise have been put. His claim is that such unskilfulness caused the death of his child, and that the shock of its death caused the sickness of the mother, with the consequent deprivation of her services and society, and the increase of his expenses. The gravamen of the action, it will be perceived, is the death of the child; and the injury sustained by the father, for which damages are sought to be recovered, is the result of that death. Since the decision of the Supreme Court in the case of Grasso *vs.* Railroad Co.,[1] it has been considered as

[1] 50 N. J. Law, 317.

settled law in this State that no action will lie for an injury caused by the death of a human being, with the exception of that provided by the Act of March 3, 1848,[1] which permits a recovery by the personal representatives of the decedent, for the benefit of the widow and next of kin, of the pecuniary loss resulting to them from such death. The decision in that case was rendered after a careful and exhaustive consideration, and the views expressed by Magie, J., in delivering the opinion of the court, must be accepted as a correct exposition of the law on the subject. The judgment of the Circuit Court should be reversed."

It must be borne in mind, however, that the doctrine of agency applies in the case of a medical student. And, accordingly, the preceptor is liable in damages to a patient for unskilful treatment by his student whom he has sent to attend such patient professionally.

BOOK REVIEWS.

THE METHODICAL EXAMINATION OF THE EYE, BEING PART I. OF A GUIDE TO THE PRACTICE OF OPHTHALMOLOGY FOR STUDENTS AND PRACTITIONERS. By William Lang, F.R.C.S. (Eng.), Surgeon to the Royal London Ophthalmic Hospital, Moorfields; Surgeon to, and Lecturer on Ophthalmology at, the Middlesex Hospital. Longmans, Green & Co., London and New York, 1895. Small 8vo, pp. 96.

Careful perusal of this little work will show any one how necessary a detailed examination of any case of ocular disease becomes, if the examiner desires to practically obtain a proper diagnosis from the existent conditions. It brings prominently into view the greatest of truths in ophthalmology, that the two necessary requisites for the success in this the most exact of the arts of medicine are to work methodically, and not to take anything for granted. In bringing these two factors constantly before the reader, the author has achieved a purpose that has been rarely obtained by other writers upon the same subject.

The natural order of sequence of examination has been properly divided into three stages: the study of the ocular appendages and the anterior portions of the eye; the examination of the vision and refraction; and, lastly, the investigation of the interior part of the eye by the aid of the ophthalmoscope. Critical study of the various plans proposed shows that the author, after a full and rich experience, has offered only those methods that have had the sanction of the best of practical clinicians and have withstood the test of time.

The presentation of the subject-matter itself has been made in a language that is free from all technicality. The words are well chosen, the sentences are crisp and easily understood, and each paragraph contains just sufficient material to concisely yet fully explain the particular portion of the subject under consideration: in fact, the uninformed student who desires to practically acquire and to thoroughly appreciate the best and the most useful of the routine methods of examination of eye-disease, can do no better in such pursuits than to use this little hand-book as a constant guide: as such, the reviewer unhesitatingly recommends it. C. A. O.

[1] N. J. Revision, 294.